CODE No.:10BT1BS01 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Supplementary Examinations May - 2019

ENGINEERING PHYSICS

[Civil Engineering,Electrical and Electronics Engineering,Mechanical Engineering, Electronics and Communication Engineering,Computer Science and Engineering, Electronics and Instrumentation Engineering,Information Technology, Electronics and Control Engineering,Computer Science and Systems Engineering,Bio-Technology]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain Lattice Parameter.
b) Draw the BCC and FCC structures.

2. a) State and explain the Heisenberg's uncertainty principle
b) Explain the behavior of an electron in a periodic potential.

3. a) Describe the intrinsic conductivity in an intrinsic semiconductor.
b) Derive an expression for intrinsic carrier concentration in an intrinsic semiconductor.

4. a) Classify Magnetic materials into different types.
b) An electron in a Hydrogen atom circulates with a radius 0.052 nm. Calculate the change in its magnetic moment, if a magnetic induction B= 3 Wb/m^2 acts at right angles to the plane of orbit.
c) What are electronic and ionic orientations?

5. a) What are the factors affecting the architectural acoustics and their remedies.
b) Explain mufflers and sound proofing.

6. a) Give the various pumping mechanisms that are adopted in lasers.
b) Discuss the essential features of a laser beam.
c) Explain the uses of lasers in various fields.

7. a) What is the principle of optical fiber?
b) What are acceptance angle and acceptance cone?
c) What is Total internal reflection?

8. a) What are the properties and applications of Nano Materials? What are carbon nanotubes?
b) Write a note on fabrication of nano materials. Mention few applications of nano materials.

CODE No.:10BT1BS02 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Supplementary Examinations May – 2019

ENGINEERING CHEMISTRY

[Civil Engineering, Electrical and Electronics Engineering, Mechanical Engineering, Electronics and Communication Engineering, Computer Science and Engineering, Electronics and Instrumentation Engineering, Information Technology, Electronics and Control Engineering, Computer Science and Systems Engineering, Bio-Technology]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. Describe the engineering applications of different insulating materials.

2. What is polymerization? Write about different types of polymerization with an example.

3. Discuss the merits and demerits of different fuel cells.

4. a) Explain corrosion.
b) Discuss the factors influencing the corrosion.

5. a) Distinguish between lyophilic colloids and lyophobic colloids
b) Explain the applications of adsorption.

6. a) Explain chemical shift in NMR spectroscopy.
b) Give the applications of Flame photometry.

7. a) Explain the classification of nanomaterials.
b) Explain the sol-gel process.

8. a) Discuss briefly the sources of water and mention the various types of impurities present in water.
b) Explain the ion-exchange process for deionization of water. Write the necessary chemical equations.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Supplementary Examinations May - 2019

MATHEMATICAL METHODS

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Computer Science and Engineering, Electronics and Instrumentation Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) If $A = \frac{1}{3}\begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & -2 \\ -2 & 2 & -1 \end{bmatrix}$ prove that $A^{-1} = A'$, where A' is the transpose of A.

b) Solve the equations $x + y - z + t = 0;\ x - y + 2z - t = 0;\ 3x + y + t = 0.$

2. a) Using Cayley Hamilton theorem , find A^{-1} and A^{-2}, where $A = \begin{bmatrix} 4 & 6 & 6 \\ 1 & 3 & 2 \\ -1 & -4 & -3 \end{bmatrix}$.

b) Reduce the quadratic form $8x^2 + 7y^2 + 3z^2 - 12xy + 4xz - 8yz$ into the canonical form by linear transformation

3. a) Find a real root of $xe^x = 2$ using Regula-falsi method.

b) By the method of least squares, find the straight line that best fits the following data.

x	1	2	3	4	5
y	14	27	40	55	68

4. a) Find f(22) for the following data by Gauss forward Interpolation formula.

x	20	25	30	35	40	45
y	354	332	291	260	231	204

b) Find the Lagrange's Interpolation polynomial for the following data.

x	0	1	2	5
y	2	3	12	147

5. a) From the following table, find the value of x for which y is maximum and find this value of y.

x	1.2	1.3	1.4	1.5	1.6
y	0.932	0.9636	0.9855	0.9975	0.9996

b) Estimate the value of the integral $\int_1^3 \frac{1}{x}dx$ by Simpsons's 1/3rd rule with 4 strips and 8 strips respectively. Determine the error by direct integration.

6. Using Runge Kutta method of fourth order evaluate y(0.1) and y(0.2) given that dy/dx =x + y, y(0) =1.

7. a) Find the Z- transform of $\sin(3n + 5)$.

b) Find $Z\left\{\frac{1}{(n+2)(n+1)}\right\}$.

8. a) Obtain the Fourier series of the function $f(x) = e^x$ from x = 0 to $x = 2\pi$.

b) Find the Fourier transform of $\frac{1}{\sqrt{|x|}}$.

CODE No.:10BT1EC01 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Supplementary Examinations May – 2019

PROBLEM SOLVING AND COMPUTER PROGRAMMING

[Civil Engineering, Electrical and Electronics Engineering, Mechanical Engineering, Electronics and Communication Engineering, Computer Science and Engineering, Electronics and Instrumentation Engineering, Information Technology, Electronics and Control Engineering, Computer Science and Systems Engineering, Bio-Technology]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Write a flow chart to find whether a given number is prime or not.
b) Distinguish between Top down and bottom up design concepts.

2. a) Explain the different data types of C with their ranges.
b) Explain formatted Input/Output with suitable examples.

3. a) Write a C program to demonstrate the output of logical expressions which use &&, ||, ! operators.
b) Write a C program to find the largest of three integers using nested if statement.

4. a) Write a C program to convert a given decimal number to its octal equivalent.
b) Write a C program to check whether a given multi digit number is palindrome.

5. a) Write a C program for bubble sort.
b) Distinguish strcpy( ) and strncpy( ) functions using appropriate examples.

6. a) Write a function which returns smaller of two numbers and use it to find smallest of four numbers.
b) Illustrate the scope of a variable with an example code segment.

7. a) Differentiate array and pointer. Explain the pointer arithmetic.
b) What is the significance of dynamic memory allocation? Explain in detail.

8. a) Explain formatted Input and output functions with examples.
b) Write a program to read **n** numbers from command line, find the sum and display on the console.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC14) Supplementary Examinations December - 2018

ENGINEERING PHYSICS

[Civil Engineering, Electrical and Electronics Engineering, Mechanical Engineering, Electronics and Communication Engineering, Computer Science and Engineering, Electronics and Instrumentation Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are Einstein's Coefficients? Find the relation between Einstein's Coefficients.	4 Marks
	b)	Describe the construction and working of He-Ne laser with the help of suitable diagrams. How is it superior to ruby laser?	10 Marks
		(OR)	
2	a)	What is the acceptance angle? Find out the expression for Numerical aperture and Acceptance angle of step index optical fiber.	10 Marks
	b)	Calculate Numerical aperture and Acceptance angle for step index optical fiber, when core and cladding refractive indices are 1.50 and 1.49 respectively.	4 Marks

UNIT-II

3	a)	Explain the Construction of Hologram.	6 Marks
	b)	Describe the acceptance cone and Numerical aperture.	8 Marks
4	a)	Derive the separation between Successive (hkl) Planes.	6 Marks
	b)	Explain Laue Diffraction of crystals with diagram.	8 Marks

UNIT-III

5	a)	State and explain Wein's law.	4 Marks
	b)	Discuss and derive Schrodinger's one dimensional time independent wave equation for system of particles	10 Marks
		(OR)	
6	a)	Derive the Kronig-Penney model.	10 Marks
	b)	Explain the effective mass of electron.	4 Marks

UNIT-IV

7	a)	Derive the Clausius- Mossotti equation.	8 Marks
	b)	State and explain the polarization and dielectric constant.	6 Marks
		(OR)	
8	a)	Distinguish between intrinsic and extrinsic semiconductors with examples.	6 Marks
	b)	Derive the Einstein's relation.	8 Marks

UNIT-V

9	a)	Explain ferromagnetism and describe hysteresis loop.	8 Marks
	b)	Write a note on soft and hard magnetic materials with examples.	6 Marks
		(OR)	
10	a)	What are Nano materials? Discuss about optical, electrical and magnetic properties of nano materials.	7 Marks
	b)	What is a colloid? Explain sol-gel method in the synthesis of nano materials.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC14) Supplementary Examinations December - 2018

ENGINEERING CHEMISTRY

[Civil Engineering, Electrical and Electronics Engineering, Mechanical Engineering, Electronics and Communication Engineering, Computer Science and Engineering, Electronics and Instrumentation Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are liquid crystals? Explain the characteristics and applications of liquid crystals.	7 Marks
	b)	Define composite. How they are classified? Explain their significances	7 Marks
		(OR)	
2	a)	What is meant by sensor? How they are classified? Give suitable examples to each.	7 Marks
	b)	What is basic principle involved in the electrochemical sensors? Explain glucose potentiometric sensor.	7 Marks

UNIT-II

3	a)	How do you measure the hardness of water by EDTA method?	7 Marks
	b)	How brackish water is purified by reverse osmosis method.	7 Marks
		(OR)	
4	a)	How the impurities present in water are removed by ion-exchange process?	7 Marks
	b)	Write different methods involved in Municipal water treatment.	7 Marks

UNIT-III

5	a)	Explain a method to control corrosion.	7 Marks
	b)	Explain how energy is produced in proton exchange membrane fuel cells.	7 Marks
		(OR)	
6	a)	Write chemistry involved in Eco friendly battery.	8 Marks
	b)	Explain different types of corrosion.	6 Marks

UNIT-IV

7	a)	Write a note on lubricants with reference to their classification, mode of action and their applications.	7 Marks
	b)	Write a note on: i) Calorific value ii) Refining of petroleum.	7 Marks
		(OR)	
8	a)	Write a note on: i) Knocking ii) Neutralization number.	8 Marks
	b)	What is power alcohol? How is it produced? What are the advantages and disadvantages of blending it with petrol?	6 Marks

UNIT-V

9	a)	Write important applications of nanomaterials.	7 Marks
	b)	Explain different principles of green chemistry.	7 Marks
		(OR)	
10	a)	Explain sol-gel process.	7 Marks
	b)	Write the advantages of green chemistry.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC14) Supplementary Examinations December - 2018

ENGINEERING MATHEMATICS

[Civil Engineering, Electrical and Electronics Engineering, Mechanical Engineering, Electronics and Communication Engineering, Computer Science and Engineering, Electronics and Instrumentation Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Solve: $xy(1+xy^2)\frac{dy}{dx}=1$. 7 Marks

b) Solve: $(D^2+4)y=\tan 2x$ by the method of variation of parameters. 7 Marks

(OR)

2 a) A body of temperature 80^0F is placed in a room of constant temperature 50^0F at a time $t = 0$. At the end of 5 minutes the body has cooled to a temperature of 70^0F. When will the temperature of the body by 60^0F. 7 Marks

b) Solve: $y''+2y'+3y=e^x\cos x$ 7 Marks

UNIT-II

3 a) If $\mathbf{u = x^2+y^2+z^2}$ and $\mathbf{x = e^{2t}}$, $\mathbf{y = e^{2t}.\cos(3t)}$, $\mathbf{z=e^{2t}.\sin(3t)}$ then find the total derivative $\frac{du}{dt}$. 7 Marks

b) Find the minimum value of $\mathbf{(x^2+y^2+z^2)}$ such that $\mathbf{xyz = a^3}$. 7 Marks

(OR)

4 a) Trace the curve $\mathbf{x^3+y^3= 3axy}$ for all $\mathbf{a>0}$. 7 Marks

b) Find the radius of curvature of $\sqrt{a}=\sqrt{r}\cos\left(\frac{\theta}{2}\right)$ at any point (r, θ). 7 Marks

UNIT-III

5 a) Find the volume formed by the revolution of loop of the curve $\boldsymbol{y^2(a+x)=x^2(3a-x)}$. 7 Marks

b) Find the surface area of the solid of revolution of the curve $\boldsymbol{r=a(1+\cos\theta)}$. 7 Marks

(OR)

6 a) Evaluate $\int_0^1\int_0^{\sqrt{1-y^2}} x^3y\,dxdy$ by changing the order of integration. 7 Marks

b) Find the volume common to the cylinders $\boldsymbol{x^2+y^2=a^2}$ and $\boldsymbol{x^2+z^2=a^2}$. 7 Marks

UNIT-IV

7 a) Use Laplace transform to evaluate $\int_0^\infty e^{-t}\left(\frac{\cos at-\cos bt}{t}\right)dt$ 7 Marks

b) Use convolution theorem to evaluate $L^{-1}\left\{\frac{1}{s^3(s^2+1)}\right\}$ 7 Marks

(OR)

8 a) Find the Laplace transform of the triangular wave of period $2a$ given by $f(t) = \begin{cases} t, & 0 < t < a \\ 2a - t, & a < t < 2a \end{cases}$. 7 Marks

b) Solve: $y'' + 25y = 10\cos 5t$, given that $y = 0$ and $Dy = 0$ at $t = 0$. 7 Marks

UNIT-V

9 a) A vector field is given by $A = \left(x^2 + xy^2\right)\hat{i} + \left(y^2 + yx^2\right)\hat{j}$. Show that the field is irrotational and find the scalar potential. 7 Marks

b) Find the work done in moving a particle in the force field $\bar{F} = 3x^2 i + (2xz - y)j + zk$, along the straight line from (0, 0, 0) to (2, 1, 3). 7 Marks

(OR)

10 a) Apply divergence theorem to evaluate $\int_s \bar{F}\,\hat{N}ds$, where $\bar{F} = 4x\hat{i} - 2y^2\hat{j} + z^2\hat{k}$ and s is the surface bounding the region $x^2 + y^2 = 4$, $z = 0$ and $z = 3$. 7 Marks

b) Verify Green's theorem for $\oint_c \left(xy + y^2\right)dx + x^2 dy$ where c is bounded by $y = x$ and $y = x^2$. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech (SVEC14) Supplementary Examinations December - 2018

MATHEMATICAL METHODS

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Computer Science and Engineering, Electronics and Instrumentation Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Find the rank of the matrix $\begin{bmatrix} 1 & 2 & 3 & 0 \\ 2 & 4 & 3 & 2 \\ 3 & 2 & 10 & 3 \\ 6 & 8 & 7 & 5 \end{bmatrix}$ by reducing it into normal form. 7 Marks

b) Verify Cayley –Hamilton Theorem for the matrix $\begin{bmatrix} 1 & 1 & 3 \\ 1 & 3 & -3 \\ -2 & -4 & -4 \end{bmatrix}$ 7 Marks

(OR)

2 a) Find the eigen values and eigen vectors of the matrix $\begin{bmatrix} 8 & -6 & 2 \\ -6 & 7 & -4 \\ 2 & -4 & 3 \end{bmatrix}$ 7 Marks

b) Reduce the quadratic form $3x^2 + 5y^2 + 3z^2 - 2xy - 2yz + 2zx$ to the canonical form and find its rank, index and signature 7 Marks

UNIT-II

3 a) Using the bisection method, find a real root of the equation $e^x - x = 2$ lying between 1 and 1.4 correct to three decimal places. 7 Marks

b) The results of measurement of electric resistance R of a copper bar at various temperatures t ° centigrade are listed below: 7 Marks

t °:	19	25	30	36	40	45	50
R:	76	77	79	80	82	83	85

Find a relation R = $a + bt$ by determining the values of a and b.

(OR)

4 a) Using Newton-Raphson method, find a root of the equation $e^x = x^2 + \cos 25x$ which is near 4.5, correct to three decimal places. 7 Marks

b) Construct Newton's forward interpolation polynomial for the following data: 7 Marks

x :	4	6	8	10
y :	1	3	8	16

Hence evaluate y for x = 5.

UNIT-III

5 a) Compute the value of cos (1.74) from the following tabular values of x and sin(x): 7 Marks

x :	1.7	1.74	1.78	1.82	1.86
sin(x)	0.9916	0.9857	0.9781	0.9691	0.9584

b) Apply the fourth order Runge-Kutta method to find $y(0.2)$ and $y(0.4)$ for the equation $10dy/dx = x^2 + y^2$, $y(0) = 1$, take the step size h = 0.2. 7 Marks

(OR)

6 a) A curve passes through the points: 7 Marks
(0, 23), (0.5, 19), (1, 14), (1.5, 11), (2, 12.5), (2.5, 16), (3, 19), (3.5, 20) and (4, 20). Obtain the area bounded by the curve, the x – axis and the extreme ordinates.

b) Using modified Euler's method, determine $y(0.4)$ in steps of 0.2, given that $y = 1$ at $x = 0$. 7 Marks

UNIT-IV

7 a) Find the half-range Sine series for the function $\mathbf{f(x) = x - x^2, 0 < x < 1}$. 7 Marks

b) Find $Z^{-1}\left[\frac{z^2 - 3}{(z+2)(z^2+1)}\right]$ 7 Marks

(OR)

8 a) Find the Fourier series of the function: $f(x) = \begin{cases} 0, when -\pi < x < 0 \\ Sinx, when 0, x < \pi \end{cases}$ 7 Marks

b) Solve the difference equation: $u_{x+2} + u_x = 5(2^x)$, given that $u_0 = 1$ and $u_1 = 0$. 7 Marks

UNIT-V

9 a) Form the partial differential by eliminating the arbitrary function from the relation: 7 Marks
$F(xy + z^2, x + y + z) = 0$.

b) A homogeneous rod of conducting material of length 100 cm has its ends kept at zero temperature and the temperature initially is $u(x,0) = \begin{cases} x, & 0 \le x \le 50 \\ 100 - x, & 50 \le x \le 100 \end{cases}$. Find the temperature $u(x,t)$ at any time. 7 Marks

(OR)

10 a) Solve the equation $\frac{\partial^2 u}{\partial x^2} = \frac{\partial u}{\partial y} + 2u$ by the method of separation of variables, subject to the conditions u = 0 and $\frac{\partial u}{\partial x} = 1 + e^{-3y}$, when x = 0 for all values of y. 7 Marks

b) If a string of length l is initially at rest in equilibrium position and each of its points is given a velocity u such that $u = cx$ for $0 < x < l/2$ and $c(l, x)$ for $l/2 < x < l$. Determine the displacement $y(x, t)$ at any time t. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech (SVEC14) Supplementary Examinations December - 2018

PROGRAMMING IN C AND DATA STRUCTURES

[Civil Engineering, Electrical and Electronics Engineering, Mechanical Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Draw a flow chart that to find the reverse of a given number.	7 Marks
	b)	What is a Compiler? Differences between Compiler and an Interpreter.	7 Marks
		(OR)	
2	a)	Describe the process of Compilation and executing High-level language programs.	7 Marks
	b)	Write the advantages and limitations of using flowcharts.	7 Marks

UNIT-II

3	a)	What are non-formatted input and output statements in C? Give suitable examples.	7 Marks
	b)	Explain the use of break and continue statement in loops with example.	7 Marks
		(OR)	
4	a)	Explain the 'while' statement with an example.	7 Marks
	b)	Write a ‘C’ program to find the GCD of two numbers.	7 Marks

UNIT-III

5	a)	Discus representation of array elements in memory with illustrations.	7 Marks
	b)	Write a program to display sum of the primary diagonal numbers in a nxn matrix	7 Marks
		(OR)	
6	a)	What is a string with respect to C? How is it declared, initialized and manipulated?	7 Marks
	b)	Describe parameter passing techniques for functions.	7 Marks

UNIT-IV

7	a)	Comprehend how command line arguments can be passed and used.	7 Marks
	b)	Discuss array of pointers and array of pointers as formal parameter.	7 Marks
		(OR)	
8	a)	What is the difference between structure and union? Give example program.	7 Marks
	b)	Write a program to copy one existing fie into other named file.	7 Marks

UNIT-V

9	a)	Describe the terms related to Binary Tree: Level, Depth, Leaf Node and Root Node.	7 Marks
	b)	Write a ‘C’ program to implement non-recursive implementation of Binary search.	7 Marks
		(OR)	
10	a)	Write a 'C' program to delete the first node, which contains the integer item 'item50' in the info field of a singly linked list.	7 Marks
	b)	Write a program to count the number of nodes in a Binary search tree.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech (SVEC14) Supplementary Examinations December - 2018

PROBLEM SOLVING AND COMPUTER PROGRAMMING

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain about problem solving concepts and their properties.	7 Marks
	b)	Define Algorithm and Flowchart. Write an algorithm and draw a flowchart to carry out the arithmetic operations like addition, subtraction, multiplication and division between two variables.	7 Marks
		(OR)	
2	a)	Define constant. Give constant representation for character and string.	7 Marks
	b)	What is the difference between Identifier and Variable? Explain with a 'C' program.	7 Marks

UNIT-II

3	a)	Explain about break and continue statements with necessary examples.	7 Marks
	b)	Write a 'C' program to find GCD of two numbers.	7 Marks
		(OR)	
4	a)	Write a 'C' program to find whether a given number is palindrome or not.	7 Marks
	b)	Write a 'C' program to print prime numbers from 1 to 100.	7 Marks

UNIT-III

5	a)	What is Recursion and write a factorial program using recursion method.	7 Marks
	b)	What is array? What are types of array in 'C' language?	7 Marks
		(OR)	
6	a)	What is the Function? Explain about basic function design with example.	7 Marks
	b)	Write a 'C' program to reverse a sentence using recursion.	7 Marks

UNIT-IV

7	a)	What are advantages of pointers? How it is used in arrays?	7 Marks
	b)	Write a 'C' program for swapping two elements using pointers.	7 Marks
		(OR)	
8		Write a 'C' program for matrix multiplication using pointers.	14 Marks

UNIT-V

9	a)	What is the procedure for creating a text files from a Binary files.	7 Marks
	b)	Write about insertion and deletion of circular queue.	7 Marks
		(OR)	
10	a)	Write a 'C' program for reading the information from a file.	7 Marks
	b)	Write a 'C' program for insertion operation in linked list.	7 Marks

CODE No.:14BT10301 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC14) Supplementary Examinations December - 2018

ENGINEERING MECHANICS

[Civil Engineering, Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 A heavy uniform rod of length ***a*** rests with one end against smooth vertical wall, the other end being tied to a point of the wall by a string of length *l*. Prove that the rod will remain in equilibrium at an angle of θ to the wall, given by $\cos^2\theta = (l^2 - a^2) / 3a^2$. **14 Marks**

(OR)

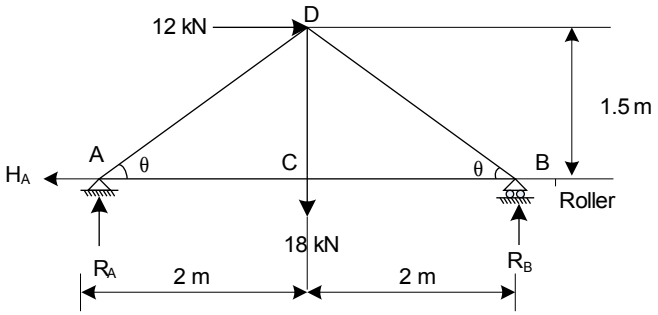
2 a) Explain the types of friction with examples. **4 Marks**

b) Two equal bodies A and B of weight 'W' each are placed on a rough inclined plane. The bodies are connected by a light string. If $\mu_A = 1/2$ and $\mu_B = 1/3$, show that the bodies will be both on the point of motion when the plane is inclined at $\tan^{-1}(5/12)$. **10 Marks**

UNIT-II

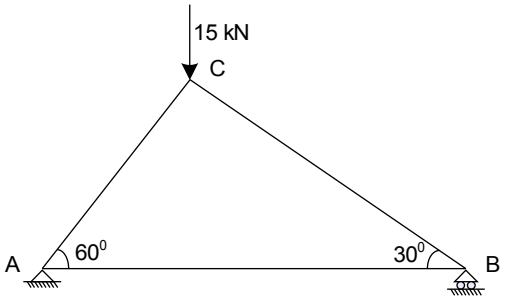
3 a) Explain the term support reactions. What are different types of supports? **4 Marks**

b) Determine the forces in the truss shown in figure which carries a horizontal load of 12kN and a vertical force load 18kN. **10 Marks**



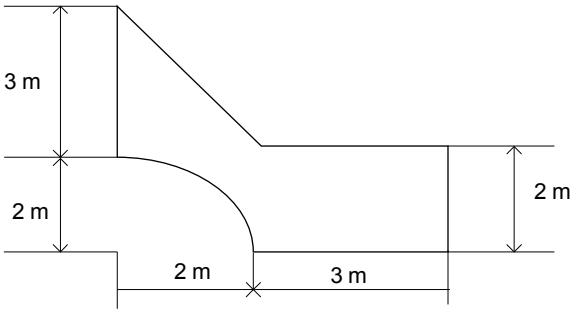
(OR)

4 The truss ABCD shown in figure has a span of 5m. It is carrying a load of 15 kN at its apex. Find the forces in the members AB, BC and AC using the method of sections. End A is hinged and B is supported in rollers. **14 Marks**



UNIT-III

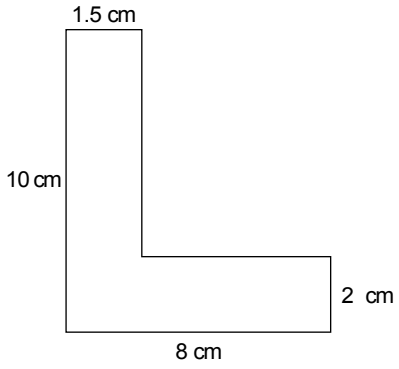
5 Determine the centroid of the given shaded area. 14 Marks



(OR)

6 a) State and prove perpendicular axis theorem. 6 Marks

b) Find the second moment of area of the lamina shown in the figure with respect to horizontal and vertical axis passing through the centroid of the section. 8 Marks



UNIT-IV

7 The acceleration of a particle along a straight line is given by the equation $\mathbf{a = 4 - t^2/9}$. If the particle starts with zero velocity from a position x = 0, find (i) its velocity after 6 seconds (ii) distance traveled in 6 seconds. 14 Marks

(OR)

8 A wheel, rotating about a fixed axis at 20 r.p.m., is uniformly accelerated for 70 seconds, during which time it makes 50 revolutions. 14 Marks

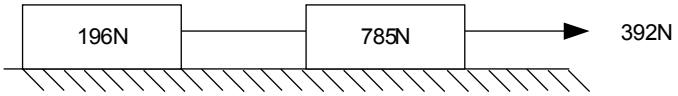
Find : (i) Angular velocity at the end of this interval.

(ii) Time required for the speed to reach 100 revolutions per minute.

UNIT-V

9 a) Define the terms impulse and momentum. 2 Marks

b) Two weights 785N and 196N are connected by a thread and moved along a rough horizontal plane under the action of a force 392N applied to the first weight of 785N as shown in figure. The coefficient of friction between the sliding forces of the weights and the plane is 0.3. Determine the acceleration of weights and tension in the thread using D′Alembert principle. 12 Marks



(OR)

10 A lift carries a weight of 1000N and is moving with a uniform acceleration of 1.962m/sec^2. Calculate the tension in the cables supporting the lift, when 14 Marks

i) lift is moving upward

ii) lift is moving downward.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC14) Supplementary Examinations May - 2019

ENGINEERING PHYSICS

[Civil Engineering,Electrical and Electronics Engineering,Mechanical Engineering, Electronics and Communication Engineering,Computer Science and Engineering, Electronics and Instrumentation Engineering,Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the essential requirements of laser action? Describe the construction and working of a ruby laser with neat diagrams.	10 Marks
	b)	Find out the differences between spontaneous and stimulated emission of light.	4 Marks
		(OR)	
2	a)	What are the types of optical fibers? Classify optical fibers based on modes of propagation and index profile.	8 Marks
	b)	Describe the optical fiber communication in detail and write applications of optical fibers in sensors.	6 Marks

UNIT-II

3	a)	Explain 'absolute frame of reference' with specific example.	5 Marks
	b)	Find out the relativistic formula for the addition of velocities showing that the speed of light is constant.	9 Marks
4	a)	What are Miller indices? How are those obtained?	7 Marks
	b)	Explain in detail Bragg's law.	7 Marks

UNIT-III

5	a)	Derive the Schrödinger Time Independent Wave Equation.	8 Marks
	b)	State Planck's Law? Arrive Wien's, Rayleigh - Jeans laws from Planck's law of Black Body Radiation.	6 Marks
		(OR)	
6	a)	Describe the basic mechanism of band formation in solids. How does the band theory of solid lead to the classification of solids?	7Marks
	b)	State and explain Heisenberg's Uncertainty Principle. An electron has the velocity of $600ms^{-1}$ with an accuracy of 0.005%. Calculate the uncertainty with which we can locate the position of electron.	7Marks

UNIT-IV

7	a)	Define dielectric constant and obtain a relation between electronic polarization and electric susceptibility of the dielectric medium.	5 Marks
	b)	Write a note of Peizo-electricity. Explain Ferro electricity in detail and mention important characteristics of ferro - electric materials.	9 Marks
		(OR)	
8	a)	Discuss drift and diffusion mechanisms in a semiconductor and explain Einstein's Equation.	6 Marks

b) Explain working principles used in Photo Diode and Solar Cell. 8 Marks

UNIT-V

9 a) What are Cooper pair of electrons? Describe BCS theory of superconductivity in detail. 8 Marks

b) Explain Meissner effect. How is it used to classify the superconductors? 6 Marks

(OR)

10 a) Explain the factors that differentiate nano materials from that of bulk materials. 5 Marks

b) What are the different types of carbon nano tubes? What are their properties? 9 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC14) Supplementary Examinations May - 2019

ENGINEERING CHEMISTRY

[Civil Engineering, Electrical and Electronics Engineering, Mechanical Engineering, Electronics and Communication Engineering, Computer Science and Engineering, Electronics and Instrumentation Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Give the classification of liquid crystals.	7 Marks
	b)	Explain the characteristic properties of insulators.	7 Marks
		(OR)	
2	a)	Explain different types of composites.	7 Marks
	b)	What are electrochemical sensors? Write its important applications.	7 Marks

UNIT-II

3	a)	A sample of water on analysis has been found to contain the following. $Ca(HCO_3)$ = 32.4ppm, $CaSo_4$ = 13.6ppm, $MgCl_2$=19.0ppm, $Mg(HCO_3)_2$ = 14.6ppm. Calculate the carbonate hardness and non carbonate hardness of the sample in degree French.	7 Marks
	b)	Explain any two important methods for softening water.	7 Marks
		(OR)	
4	a)	Discuss permutit process and explain its advantages.	7 Marks
	b)	Define the term reverse osmosis. Explain the process of purification of sea water using this method.	7 Marks

UNIT-III

5	a)	How to construct the nickel-cadmium battery?	7 Marks
	b)	Discuss about phosphoric acid fuel cells.	7 Marks
		(OR)	
6	a)	Define corrosion. Explain galvanic corrosion.	7 Marks
	b)	Calculate the standard emf of Ni-Ag cell whose E°_{Ni} and E°_{Ag} are - 0.25 and 0.83V also write the cell representation.	7 Marks

UNIT-IV

7	a)	Discuss various types of liquid lubricants.	7 Marks
	b)	How do you synthesis petrol by fischer-tropsch process.	7 Marks
		(OR)	
8	a)	How to determine the calorific value of solid fuel by bomb calorimeter.	7 Marks
	b)	Write short note on: i) Fire Point ii) Cloud Point	7 Marks

UNIT-V

9	a)	Describe plasma enhanced chemical vapour deposition method for the preparation of nano materials.	7 Marks
	b)	Explain the principles of green engineering.	7 Marks
		(OR)	
10	a)	Discuss the electrical and optical properties of nano materials.	7 Marks
	b)	Give an explanation on Green Manufacturing system.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC14) Supplementary Examinations May – 2019

ENGINEERING MATHEMATICS

[Civil Engineering, Electrical and Electronics Engineering, Mechanical Engineering, Electronics and Communication Engineering, Computer Science and Engineering, Electronics and Instrumentation Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Solve $x(x-1)\frac{dy}{dx} - y = x^2(x-1)^2$ 7 Marks

b) A body is originally at 100^0C and cools down to 80^0C in 10 minutes. If the temperature of the air is 20^0C. What will be its temperature after 20 minutes? 7 Marks

(OR)

2 a) Solve $\frac{d^2y}{dx^2} + 7\frac{dy}{dx} + 12y = 3\cos 2x$ 7 Marks

b) Solve the differential equation $(D^2 + a^2)\ y = \tan ax$ using the method of variation of parameters. 7 Marks

UNIT-II

3 a) If $u = x^2+y^2+z^2$ and $x = e^{2t}$, $y = e^{2t}.\cos(3t)$, $z = e^{2t}.\sin(3t)$ then find the total derivative $\frac{du}{dt}$. 7 Marks

b) Find the minimum value of $(x^2+y^2+z^2)$ such that $xyz = a^3$. 7 Marks

(OR)

4 a) Trace the curve $x^3+y^3 = 3axy$ for all $a>0$. 7 Marks

b) Find the radius of curvature of $\sqrt{a} = \sqrt{r}\cos\left(\frac{\theta}{2}\right)$ at any point **(r, θ).** 7 Marks

UNIT-III

5 a) Find the length of the arc of the parabola $x^2=4ay$ measured from the vertex to one extremity of the latus rectum. 7 Marks

b) Find the surface of the solid formed by revolving the cardioids $r = a(1+\cos(\theta))$ about the initial line. 7 Marks

(OR)

6 a) Find the volume of a solid generated by revolving the ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1\ \ (a>b)$ about $x-$axis 7 Marks

b) Find the area included between one arc of the cycloid $x = a(\theta+\sin\theta),\ y = a(1-\cos\theta)$ and its base. 7 Marks

UNIT-IV

7 a) Using Heaviside's expansion formula, find $L^{-1}\left\{\frac{S^2 - 6}{S^3 + 4S^2 + 3S}\right\}$ 7 Marks

b) Find the Laplace's Transform of the periodic function 7 Marks

$f(t) = \begin{cases} t & a < t < a \\ 2a - t & a < t < 2a \end{cases}$, $f(t + 2a) = f(t)$.

(OR)

8 a) Using Laplace transform solve $\frac{d^2y}{dt^2} + 2\frac{dy}{dt} + 5y = e^{-t}\sin t$ given than $y(0) = 0$, $y^1(0) = 1$. 7 Marks

b) (i) Find the Laplace transform of unit step function. 7 Marks

(ii) Find the inverse Laplace transform of $\frac{s}{(s + 2)^2 + 9}$.

UNIT-V

9 a) A vector field is given by $A = \left(x^2 + xy^2\right)\hat{i} + \left(y^2 + yx^2\right)\hat{j}$. Show that the field is irrotational and find the scalar potential. 7 Marks

b) Find the work done in moving a particle in the force field $\bar{F} = 3x^2i + (2xz - y)j + zk$, along the straight line from (0, 0, 0) to (2, 1, 3). 7 Marks

(OR)

10 a) Find the work done by $\bar{F} = (2x - y - z)i + (x + y - z)j + (3x - 2y - 5z)k$ along a curve C in the xy-plane given by $\boldsymbol{x^2 + y^2 = 9}$, $\boldsymbol{z = 0}$. 7 Marks

b) Use Gauss divergence theorem, to evaluate $\iint_S (xdydz + ydzdx + zdxdy)$ where $\boldsymbol{S}$ is the portion of the plane $\boldsymbol{x + 2y + 3z = 6}$, which lies in the first octant. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC14) Supplementary Examinations May - 2019

MATHEMATICAL METHODS

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Computer Science and Engineering, Electronics and Instrumentation Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Find the rank of the following matrix by reducing it into normal form. 7 Marks

$$A = \begin{bmatrix} 1 & 2 & -1 & 4 \\ 2 & 4 & 3 & 4 \\ 1 & 2 & 3 & 4 \\ -1 & 2 & 6 & -7 \end{bmatrix}$$

b) Find the values of **a** and **b** for which the equations: 7 Marks
$x + ay + z = 3$; $x + 2y + 2z = b$; $x + 5y + 3z = 9$ are consistent. When will these equations have a unique solution?

(OR)

2 a) Determine the Eigen values and the corresponding Eigen vectors of the matrix. 7 Marks

$$\begin{pmatrix} 6 & 3 & 2 \\ -2 & 3 & -1 \\ 2 & -1 & 3 \end{pmatrix}.$$

b) Reduce the quadratic form $2yz + 2zx + 2xy$ to the canonical form. Also, find the index, signature and nature. 7 Marks

UNIT-II

3 a) Find the positive root of $x^4 - x = 10$ correct to three decimal places, using Newton-Raphson method. 7 Marks

b) Given $\log_{10} 654 = 2.8156$, $\log_{10} 658 = 2.8182$, $\log_{10} 659 = 2.8189$, $\log_{10} 661 = 2.8202$, find by using Lagrange's formula, the value of $\log_{10} 656$. 7 Marks

(OR)

4 a) Using Newton-Raphson method, find a root of the equation $e^x = x^2 + \cos 25x$ which is near 4.5, correct to three decimal places. 7 Marks

b) Construct Newton's forward interpolation polynomial for the following data: 7 Marks

x :	4	6	8	10
y :	1	3	8	16

Hence evaluate y for x = 5.

UNIT-III

5 a) The distance covered by an athlete for the 50 metre is given in the following table: 7 Marks
Time(sec): 0 1 2 3 4 5 6 Distance (metre) 0 2.5 8.5 15.5 24.5 36.5 50. Determine the speed of the athlete at t = 5 sec. correct to two decimals.

b) Solve $y' = x + y$, given $y(1) = 0$. Find $y(1.1)$ and $y(1.2)$ by Taylor's series method. Also, compare the result with its exact value. 7 Marks

(OR)

6 a) Find the first and second derivatives of the function tabulated below at the point 1.1 — 7 Marks

x :	1.0	1.2	1.4	1.6	1.8	2.0
y :	0	0.128	0.544	1.296	2.432	4.000

b) Use fourth order Runge-Kutta method to find — 7 Marks

y at x = 0.1, given that $dy/dx = 3e^x + 2y$, $y(0) = 0$ and $h = 0.1$

UNIT-IV

7 a) Obtain the Half Range Cosine series for $x \sin x$ in $(0, \pi)$. — 7 Marks

b) Find the Fourier Cosine transform of $f(x) = \frac{1}{1+x^2}$. — 7 Marks

(OR)

8 a) Find $Z^{-1}\left(\frac{z}{(z-2)(z-3)}\right)$ using Convolution theorem. — 7 Marks

b) Find the Fourier series to represent function $f(x) = |x|, -\pi < x < \pi$ — 7 Marks

UNIT-V

9 a) Form the partial differential equation for $f(xy + z^2, x + y + z) = 0$. — 7 Marks

b) Solve by the method of separation of variables, $\frac{\partial^2 u}{\partial x^2} = \frac{\partial u}{\partial y} + 2u$ where u(0,y)=0 and $\frac{\partial u}{\partial x} = 1 + e^{-3y}$ at x=0. — 7 Marks

(OR)

10 a) Form the partial differential equation from $2z = (x+a)^{1/2} + (y-a)^{1/2} + b$;a,b being constants. — 7 Marks

b) A tightly stretched string with fixed end points x=0 and $x = l$ is initially in a Position $y = y_0 \sin^3 \frac{\pi x}{l}$. If it is released from rest from this position , find the displacement y(x,t) — 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC14) Supplementary Examinations May - 2019

PROGRAMMING IN C AND DATA STRUCTURES

[Civil Engineering, Electrical and Electronics Engineering, Mechanical Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write the difference between language and package and also mention any three languages and any three packages.	4 Marks
	b)	Define algorithm and write the properties of algorithm. Write the Euclid's algorithm for finding the GCD of given two numbers.	10 Marks
		(OR)	
2	a)	What is an algorithm and also explain the components of algorithm.	6 Marks
	b)	Explain the structure of a C program using an example.	8 Marks

UNIT-II

3	a)	Discuss various single character input and output functions.	7 Marks
	b)	Differentiate between pretest and post test loops.	7 Marks
		(OR)	
4	a)	Write a program to check whether a number is a power of 2 or not.	7 Marks
	b)	Discuss the need for nested loop. Explain any one scenario with C code.	7 Marks

UNIT-III

5	a)	Write a C program for addition of two matrices.	7 Marks
	b)	Describe the program using Multiple Functions.	7 Marks
		(OR)	
6	a)	Differences between *strcat()* and *strncat()*.	7 Marks
	b)	Write a program using a function to perform multiplication of two matrices having integer numbers.	7 Marks

UNIT-IV

7	a)	Explain array of structures and structure within a structure with examples.	7 Marks
	b)	Write a C program to read and display a text from the file.	7 Marks
		(OR)	
8	a)	How pointers can be passed to functions as parameters? Explain with a program.	7 Marks
	b)	What is a file? Explain file operations and C library functions for them.	7 Marks

UNIT-V

9	a)	Compare linked list with array. List the merits and demerits of linked list.	7 Marks
	b)	Explain operations performed on doubly linked list.	7 Marks
		(OR)	
10	a)	What is queue? Discuss all its variants.	7 Marks
	b)	Discuss tree as a data structure. Explain its applications in detail.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC14) Supplementary Examinations May - 2019

PROBLEM SOLVING AND COMPUTER PROGRAMMING

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the characteristics of a flow chart?	7 Marks
	b)	Draw flow chart for finding largest among three numbers.	7 Marks
		(OR)	
2	a)	What is a constant? List out different constants used in C.	7 Marks
	b)	What is the use of variable? Why they are needed?	7 Marks

UNIT-II

3	a)	Give different control structures used in C.	7 Marks
	b)	Write a program to check given number is strong number or not.	7 Marks
		(OR)	
4	a)	Write note on switch and break statements.	7 Marks
	b)	Write a C program to print the given number in words.	7 Marks

UNIT-III

5	a)	Write a C program to insert an element in a given array.	7 Marks
	b)	Write a C program to find the transpose of a given matrix.	7 Marks
		(OR)	
6	a)	Explain storage classes in C language.	7 Marks
	b)	Write a function to perform addition of two complex numbers.	7 Marks

UNIT-IV

7	a)	What are advantages of pointers? How it is used in arrays?	7 Marks
	b)	Write a program for swapping two elements using pointers.	7 Marks
		(OR)	
8		Write a program for matrix multiplication using pointers.	14 Marks

UNIT-V

9	a)	What are characteristics of a data structure? Why data structures are used?	7 Marks
	b)	Write a program for queue implementation using array.	7 Marks
		(OR)	
10	a)	Distinguish between arrays and linked list.	5 Marks
	b)	Write a routine to insert an element in a linked list.	9 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC14) Supplementary Examinations May - 2019

ENGINEERING MECHANICS

[Civil Engineering, Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 A heavy uniform rod of length a rests with one end against smooth vertical wall, the other end being tied to a point of the wall by a string of length *l*. Prove that the rod will remain in equilibrium at an angle of θ to the wall, given by $\mathbf{Cos^2\theta = (l^2 - a^2)/3a^2}$. — 14 Marks

(OR)

2 a) State laws of dry friction. — 4 Marks

b) A screw jack has square threads of mean diameter 6cm, helix angle 10^0 and coefficient of friction 0.3. Determine the force that must be applied to the end of 60cm lever to raise a weight of 3000N. — 10 Marks

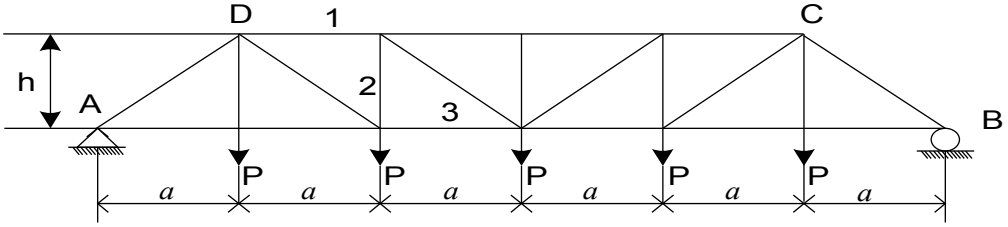
UNIT-II

3 a) What are the different types of support? — 4 Marks

b) A beam 6 meters long is simply supported at the ends and carries a uniformly distributed load of 2.0kN/m and three concentrated loads 1.5kN, 2.5kN and 3.5kN acting respectively at a distance of 1.5m, 3m and 4.5m from the left end. Calculate the reactions at both ends. — 10 Marks

(OR)

4 Using the method of sections, determine the forces in bars 1,2 and 3 of the plane truss loaded and supported as shown in the figure. — 14 Marks



UNIT-III

5 Determine the Second moment area of a T-section about two orthogonal axes passing through the centroid. Height of the section is 220mm, flange width is 150mm, flange thickness is 20mm. — 14 Marks

(OR)

6 a) What do mean by radius of gyration and section modulus? — 4 Marks

b) Find the moment of inertia of T- Section with flange 150mm x 50mm and web of 150mm x 50mm about X - X and Y - Y axis through the center of gravity of section. — 10 Marks

UNIT-IV

7 a) What is the relation between angular velocity and linear velocity? — 4 Marks

b) A ball is thrown down the inclined plane and strikes at a distance s=75m. If the ball rises to a maximum height h=19.6m above the point of release, compute its initial velocity and inclination **α**. — 10 Marks

(OR)

8 A wheel, rotating about a fixed axis at 20 r.p.m., is uniformly accelerated for 70 seconds, during which time it makes 50 revolutions. Find: 14 Marks

(i) Angular velocity at the end of this interval.

(ii) Time required for the speed to reach 100 revolutions per minute.

UNIT-V

9 a) State and explain work energy principle. 2 Marks

b) An elevator weighing 4900N is ascending with an acceleration of $3m/s^2$. During the ascent, its operator, whose weight is 686N is standing on the scales placed on the floor. What is the scale reading? What will be the total tension in the cable of the elevator during this motion? 12 Marks

(OR)

10 A gun weighing 667**.**5kN fires projectile with a muzzle velocity of 1080mps. The gun is nested in a spring of having as total spring constant of 26,700kN/m. Determine the recoil of the gun after explosion. 14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech I Semester (SVEC-16) Regular/Supplementary Examinations December - 2018

ENGINEERING CHEMISTY

[Civil Engineering, Mechanical Engineering, Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain estimation of water hardness by EDTA method.	7 Marks
	b)	Discuss advanced purification method developed for obtaining reliable drinking water from challenging water sources.	7 Marks
		(OR)	
2	a)	Give the specifications of water for "steam generation". Explain Caustic embrittlement, Priming and Foaming	7 Marks
	b)	What is desalination? Describe one method available for desalination.	7 Marks

UNIT-II

3		What are biodegradable polymers? Formulate the mechanism of degradation of biodegradable polymers and mention their applications.	14 Marks
		(OR)	
4		Classify the conducting polymers and write their applications in electronics and medical sectors.	14 Marks

UNIT-III

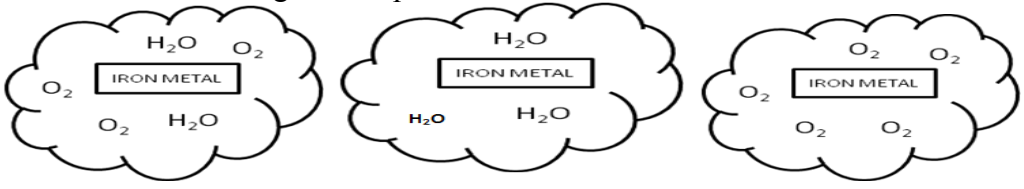
5	a)	Discuss the twelve principles of GREEN CHEMISTRY.	12 Marks
	b)	Mention the merits and demerits of sol-gel method.	2 Marks
		(OR)	
6	a)	"GREEN CHEMISTRY is also called benign chemistry or sustainable chemistry". Comment.	6 Marks
	b)	Summarize the applications of nano tubes, nano wires, nano composites, nano dendrimers.	8 Marks

UNIT-IV

7	a)	Briefly outline the types of battery, chemistry involved and their role in our day to day life.	7 Marks
	b)	Explain the construction and working of potentiometric sensor.	7 Marks
		(OR)	
8		Define Battery. Explain lithium polymer batteries and mention their applications.	14 Marks

UNIT-V

9	a)	Explain what type of corrosion occurs when: i) Screw and washer are made of different metals. ii) Presence of NaOH in mild steel boiler under stress.	10 Marks
	b)	Write a short note on Lubrication.	4 Marks
		(OR)	
10	a)	Identify and explain in detail mechanism of the possible type of corrosion that Iron metal will undergo in the pictured environment.	9 Marks



Assume that only the given molecules exist in the environment.

	b)	Discuss the role of Galvanizing in corrosion control methods.	5 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech I Semester (SVEC-16) Regular/Supplementary Examinations December - 2018

ENGINEERING PHYSICS

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the construction and operation of a semiconductor laser.	10 Marks
	b)	The refractive indices of core and cladding materials of a step index fibre are 1.48 and 1.45 respectively. Calculate: i) Numerical aperature. ii) Fractional refractive indices change. iii) Acceptance angle. iv) Critical angle at core-cladding interface.	4 Marks
		(OR)	
2	a)	Draw the block diagram of an optical fiber communication system and explain the function of each block.	9 Marks
	b)	Mention various applications of optical fibers.	5 Marks

UNIT-II

3	a)	Show that the energies of a particle in a potential box are quantized.	11 Marks
	b)	An electron is bound in a one dimensional box having size of 4×10^{-10}m. What will be its minimum energy?	3 Marks
		(OR)	
4	a)	Explain Fermi-Dirac distribution for electrons in a metal. Discuss its variation with temperature.	9 Marks
	b)	Explain the origin of energy bands formation in solids.	5 Marks

UNIT-III

5	a)	Draw the energy band diagram and V-I characteristics of a p-n junction diode.	4 Marks
	b)	Explain the construction and working of LED.	5 Marks
	c)	Explain the working condition of a solar cell.	5 Marks
		(OR)	
6	a)	Justify the statement "All dielectrics are insulators but all insulators are not dielectrics".	2 Marks
	b)	Define : i) Dielectric constant. ii) Electric Polarisation. iii) Polarizability.	3 Marks
	c)	Deduce the expression for electronic polarization in dielectrics.	9 Marks

UNIT-IV

7	a)	Define the terms critical temperature, critical magnetic field, critical current and flux quantisation of a superconductor.	6 Marks
	b)	State **dc** Josephson effect and **ac** Josephson effect.	4 Marks
	c)	List any six applications of superconductors.	4 Marks
		(OR)	
8	a)	Define the term absorption coefficient. Explain the methods used to measure the absorption coefficients.	7 Marks
	b)	What are the basic necessities of an acoustically good hall?	7 Marks

UNIT-V

9	a)	Explain the principle factors which affect the properties of nanomaterials.	5 Marks
	b)	Discuss in detail about the fabrication of nanomaterials by pulsed laser deposition.	9 Marks
		(OR)	
10	a)	What are Miller Indices? Illustrate the steps to find the Miller indices by considering a suitable example.	5 Marks
	b)	What are Top Down and Bottom Up methods? Describe the process of Ball Milling technique in the fabrication of nano materials.	9 Marks

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CODE No.: 16BT1BS03 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech I Semester (SVEC-16) Regular/Supplementary Examinations December - 2018

MATRICES AND NUMERICAL METHODS

[Civil Engineering, Electrical and Electronics Engineering, Mechanical Engineering, Electronics and Communication Engineering, Computer Science and Engineering, Electronics and Instrumentation Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Define the Quadratic form and reduce $x^2 + 4y^2 + z^2 + 4xy + 6yz + 2zx$ to canonical form by technique of orthogonal transformation and hence find its rank index and signature. 14 Marks

(OR)

2 Reduce the quadratic form $2x_1x_2+2x_1x_3-2x_2x_3$ into canonical form by orthogonal transformation. Also identify its nature, rank, signature and index. 14 Marks

UNIT-II

3 a) Compute the real root of $x \sin x + \cos x = 0$ which is near $x = \pi$ by Newton's Raphsons method. 7 Marks

b) The following table gives the results of the measurements of train resistances. V is the velocity in miles per hour. R is the resistance in pounds per ton. 7 Marks

V	20	40	60	80	100	120
R	5.5	9.1	14.9	22.8	33.3	46.0

If R is related to V by the relation $R= a+bV+cV^2$, evaluate the values of **a, b** and **c**.

(OR)

4 a) Verify that the equation $x^2+4x-10 =0$ has a root inside the interval (1,2) and use the limits of the interval as starting values of the bisection method to approximate the root in five bisections. 7 Marks

b) The voltage **v** across a capacitor at time **t** seconds is given by the following table: 7 Marks

t	0	2	4	6	8
v	150	63	28	12	5.6

Applying the method of least squares to fit a curve of the form $v = a\ e^{kt}$ to this data.

UNIT-III

5 a) From the following data estimate the number of persons having incomes between 3000 and 3500, using appropriate interpolation formula. 7 Marks

Income:	Below 400	500-1000	1000-2000	2000-3000	3000-4000
No. of persons:	6000	4250	3600	1500	650

b) Construct a cubic polynomial which takes the following values by Newton's forward interpolation formula 7 Marks

X	0	1	2	3
f(x)	1	2	1	10

(OR)

6 a) Using appropriate interpolation formula, estimate the number of persons earning wages between Rs 40/- and Rs 50/- from the following data: 7 Marks

Wages(Rs):	Below 40	40-60	60-80	80-100	100-120
No. of persons:	250	120	100	70	50

b) The table gives the distance in Kilometers of the visible horizon for the given heights in meters above the earth's surface: 7 Marks

x(height):	100	150	200	250	300	350	400
d(distance):	10.63	13.03	15.04	16.81	18.42	19.90	21.27

Estimate the value of **d** when x = 375 meters applying suitable interpolation formula.

UNIT-IV

7 a) The population of a certain town as shown in the table: 7 Marks

Year	1961	1971	1981	1991	2001
Population (in thousands)	19.96	39.65	58.81	77.21	94.61

Estimate the rate of growth of population in the year 1991.

b) Compute the integral $\int_0^6 \frac{dx}{1+x^2}$, using Trapezoidal rule by considering 7 ordinates. 7 Marks

(OR)

8 a) A slider in a machine moves along a fixed straight rod. Its distance **x** cm along the rod is given below for various values of the time **t** seconds. Find the velocity of the slider and its acceleration when t = 0.3. 7 Marks

t	0	0.1	0.2	0.3	0.4	0.5	0.6
x	30.13	31.62	32.87	33.64	33.95	33.81	33.24

b) The velocity (v) of a particle at distance (s) from a point on its path is given by the table: 7 Marks

s (ft)	0	10	20	30	40	50	60
v(ft/sec)	47	58	64	65	61	52	38

Estimate the time taken to travel 60ft by using Simpson's 3/8 rule.

UNIT-V

9 Use Runge-Kutta mehod of order 4, compute y(0.4) from $10\frac{dy}{dx} = x^2 + y^2$, y(0)=1 by taking step size 0.2. 14 Marks

(OR)

10 a) Solve the equation $\frac{dy}{dx} = x - y^2$ with the conditions y(0) = 1, find y(0.2) and y(0.4) using Taylor's series. 7 Marks

b) Tabulate y(0.1), y(0.2) and y(0.**3**) using Euler's method from the differential equation $\frac{dy}{dx} = y^2 + x$ and y(0)=1. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech I Semester (SVEC-16) Regular/Supplementary Examinations December – 2018

MULTIVARIABLE CALCULUS AND DIFFERENTIAL EQUATIONS

[Civil Engineering, Electrical and Electronics Engineering, Mechanical Engineering, Electronics and Communication Engineering, Computer Science and Engineering, Electronics and Instrumentation Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Obtain the solution of the differential equation $y\left(2x^2y + e^x\right)dx = \left(e^x + y^3\right)dy$. 7 Marks

b) If the surroundings are maintained at 30ºC and the temperature of the body cools from 80ºC to 60ºC in 12 minutes, then determine temperature of the body after 24 minutes. 7 Marks

(OR)

2 a) Determine the solution of the differential equation $x^2ydx - \left(x^3 + y^3\right)dy = 0$. 7 Marks

b) A copper ball is heated to a temperature of 80º C. Then at time t = 0 it is placed in water which is maintained at 30ºC. If at t = 3 minutes, the temperature of the ball is reduced to 50ºC , then obtain the time at which the temperature of the ball is 40ºC. 7 Marks

UNIT-II

3 a) Determine the solution of $\left(D^2 + D + 1\right)y = x^3$. 7 Marks

b) Determine the solution of $\left(D^2 + 2\right)y = e^x \cos x$. 7 Marks

(OR)

4 a) Determine the solution of $\left(D^2 + 1\right)x = t\cos t$, given $x = 0, \frac{dx}{dt} = 0$ where $t = 0$. 7 Marks

b) Determine the solution of $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = xe^x \sin x$. 7 Marks

UNIT-III

5 a) If $x = u(1 - v), y = uv$ prove that $JJ' = 1$. 7 Marks

b) Apply Taylor's theorem to expand polynomial $x^2y + 3y - 2$ in powers of $(x - 1)$ and $(y + 2)$. 7 Marks

(OR)

6 a) Identify the functions $u = x + y + z$, $v = xy + yz + zx$ and $w = x^2 + y^2 + z^2$ are functionally dependent and if so, obtain the relation between them. 7 Marks

b) Investigate the maximum and minimum values of $f = 3x^4 - 2x^3 - 6x^2 + 6x + 1$. 7 Marks

UNIT-IV

7 a) Evaluate integral $\int_0^1 \int_0^{\sqrt{1-y^2}} (x^2 + y^2)\,dy\,dx$ by changing into polar co-ordinates. 7 Marks

b) Evaluate integral $\int_0^1 \int_0^{\sqrt{1-x^2}} \int_0^{\sqrt{1-x^2-y^2}} \frac{dx\,dy\,dz}{\sqrt{1-x^2-y^2-z^2}}$ by changing into spherical co-ordinates. 7 Marks

(OR)

8 a) Evaluate $\int_{-1}^{1} \int_{0}^{z} \int_{x-z}^{x+z} (x+y+z)\,dx\,dy\,dz$. 7 Marks

b) Evaluate $\iint_R (x+y)^2\,dx\,dy$, where R is the parallelogram in the XY-plane with vertices $(1,0),(3,1),(2,2),(0,1)$ using the transformation $u = x + y$ and $v = x - 2y$. 7 Marks

UNIT-V

9 a) Evaluate the directional derivative of $\phi = x^2yz + 4xz^2$ at the point (1,-2,1) in the direction of the vector $2i - j - 2k$. 7 Marks

b) Evaluate $\oint_S F.ds$ where $F = 4xi - 2y^2j + z^2k$ and S is the surface bounded by the region $x^2 + y^2 = 4, z = 0$ and $z = 3$. 7 Marks

(OR)

10 a) If $R = xi + yj + zk$ and $r \neq 0$, then show that $div(r^n R) = (n+3)r^n$. 7 Marks

b) Verify the Gauss Divergence theorem for $F = 4xzi - y^2j + yzk$ taken over the cube bounded by x = 0, x = 1, y = 0, y = 1, z = 0, z =1. 7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech I Semester (SVEC-16) Regular/Supplementary Examinations December - 2018

TECHNICAL ENGLISH

[Civil Engineering, Mechanical Engineering, Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	"Language is a tool of communication". Elucidate with features of the language.	14 Marks
	(OR)	
2	Explain various modes of communication. What is the basis of categorizing them?	14 Marks

UNIT-II

3	Correlate listening and taking notes. Provide a few tips for effective note-taking.	14 Marks
	(OR)	
4	Listening is an art and like any other art it has to be cultivated consciously. Discuss.	14 Marks

UNIT-III

5	Define Persuasive speaking. Write five sentences making an emotional appeal to your sister and persuade her to donate blood at the blood donation camp organized by your college.	14 Marks
	(OR)	
6	"Being Confident, clear and fluent is the key to effective oral communication". Discuss by providing appropriate guidelines.	14 Marks

UNIT-IV

7	What are the various types of reading? Discuss.	14 Marks
	(OR)	
8	Do you believe in what Francis Bacon has said – "Reading maketh a full man, conference a ready man and writing an exact man"? Elaborate on how important reading and interpretation is for a professional.	14 Marks

UNIT-V

9	What are the various elements of style? Illustrate each of the elements.	14 Marks
	(OR)	
10	Writer's block has become a serious problem because of undue pressure. Explain the terms and suggest ways to overcome it.	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech I Semester (SVEC-16) Regular/Supplementary Examinations December - 2018

ELECTRICAL CIRCUITS

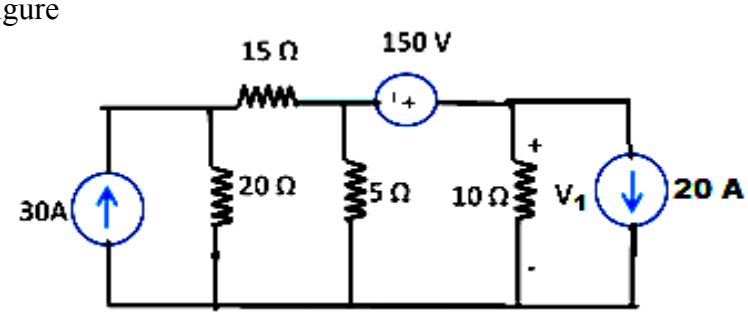
[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

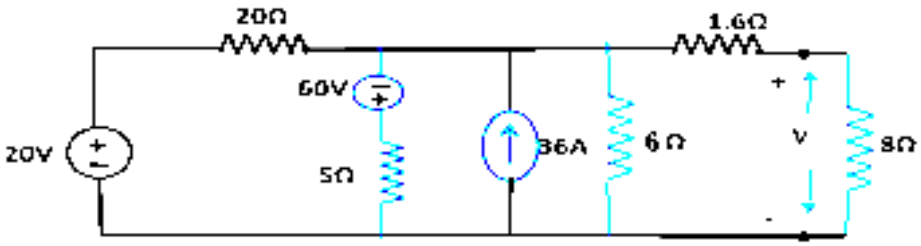
Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Compute the voltage across 10Ω resistor V_1, using nodal analysis for the circuit shown in figure 7 Marks

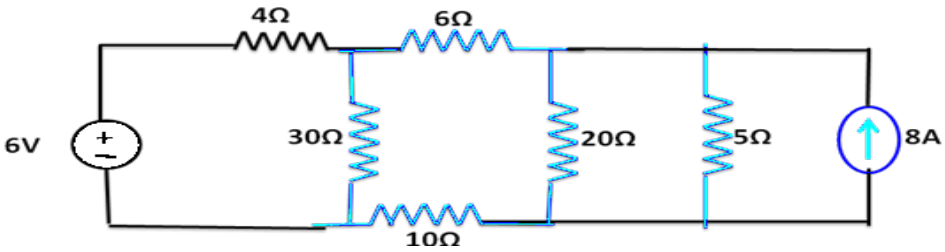


b) Use a series of source transformations to find the voltage V in the circuit shown in figure. 7 Marks

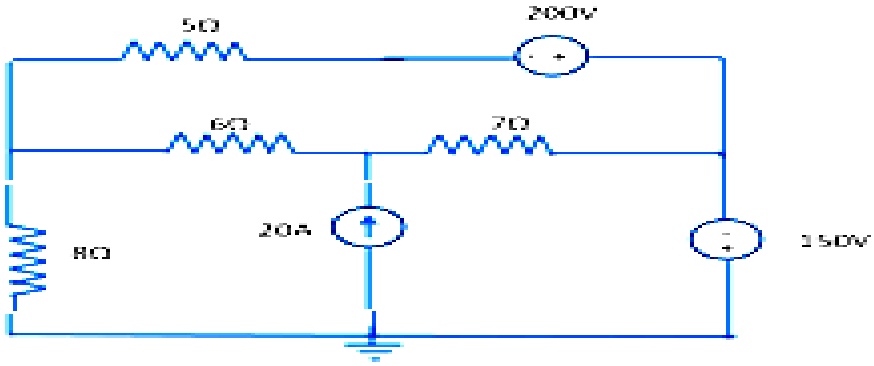


(OR)

2 a) For the circuit shown in figure, use a series of source transformations to find the power associated with 6V source. 7 Marks



b) Compute the voltage across the 7Ω resistor, using mesh analysis for the circuit shown in figure 7 Marks



UNIT-II

3 a) An RLC series circuit has R = 4Ω and L = 25mH. 7 Marks

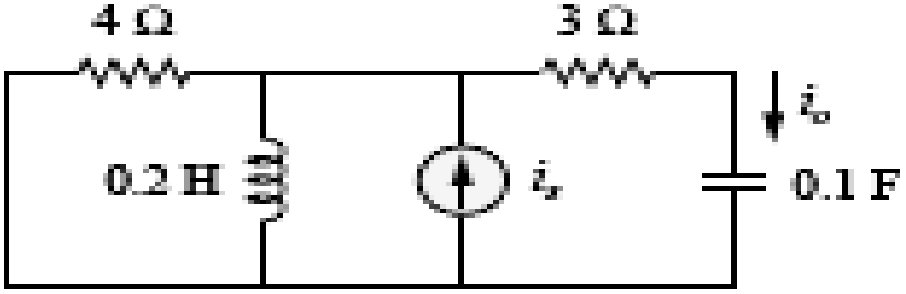
i) Calculate the value of *C* that will produce a quality factor of 50.

ii) Find ω_1 and ω_2.

iii) Determine the average power dissipated at $\omega = \omega_0, \omega_1, \omega_2$.

Take V_m = 100 V.

b) If i_s = 20 sin (10t+15^0) A in the circuit shown in figure, compute the current passing through capacitor i_0. 7 Marks



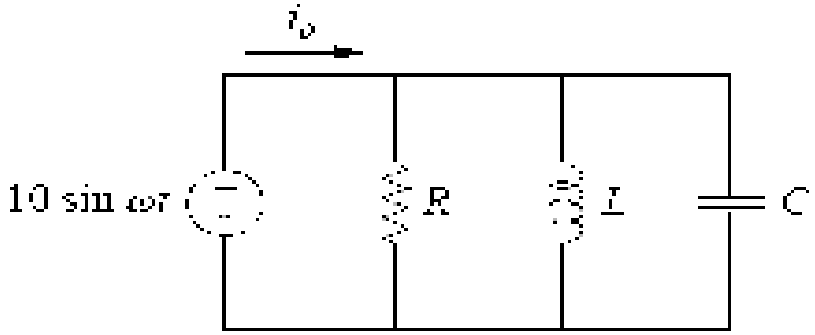
(OR)

4 a) In the parallel RLC circuit of figure, let R = 8kΩ, L = 0.2mH and C = 8μF. 7 Marks

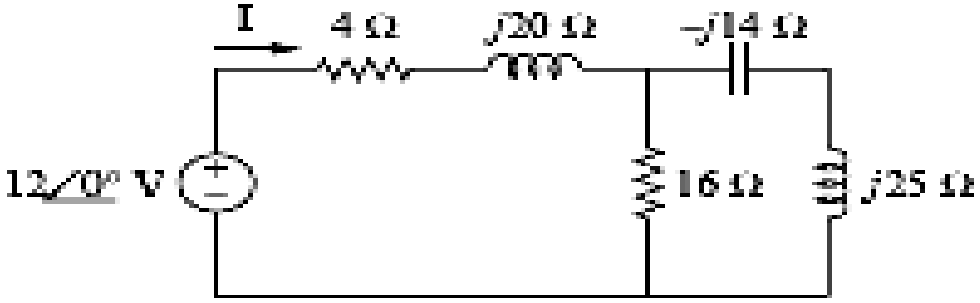
i) Calculate ω_0, Q and Band width.

ii) Find ω_1 and ω_2

iii) Determine the power dissipated at ω_0, ω_1 and ω_2.



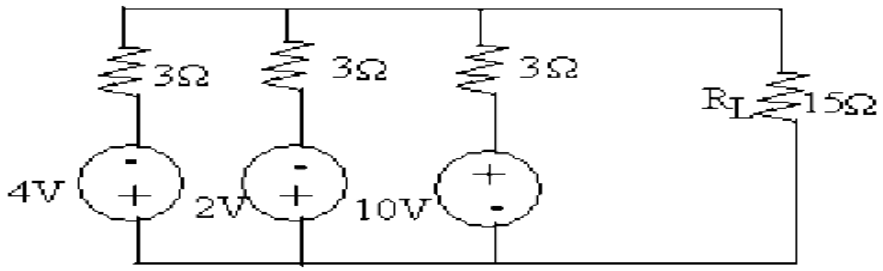
b) Compute the circuit impedance and current in all the elements of circuit shown in figure. 7 Marks



UNIT-III

5 a) State and explain Millman's theorem. 7 Marks

b) Find the current through load resistance R_L and also find the voltage drop across load using Millman's theorem as shown in figure. 7 Marks

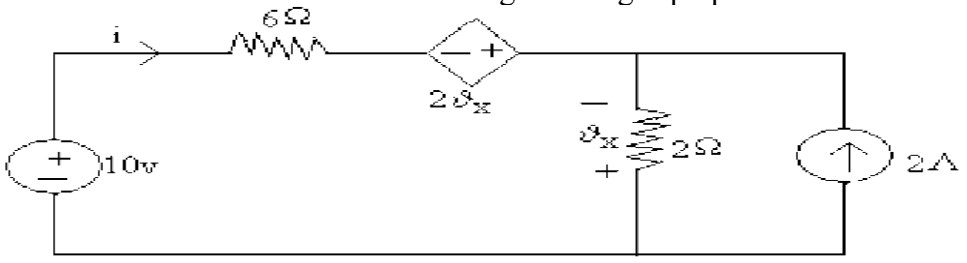


(OR)

6 a) State and explain maximum power transfer theorem and derive the necessary 6 Marks

conditions for maximum power transfer for a DC excitations.

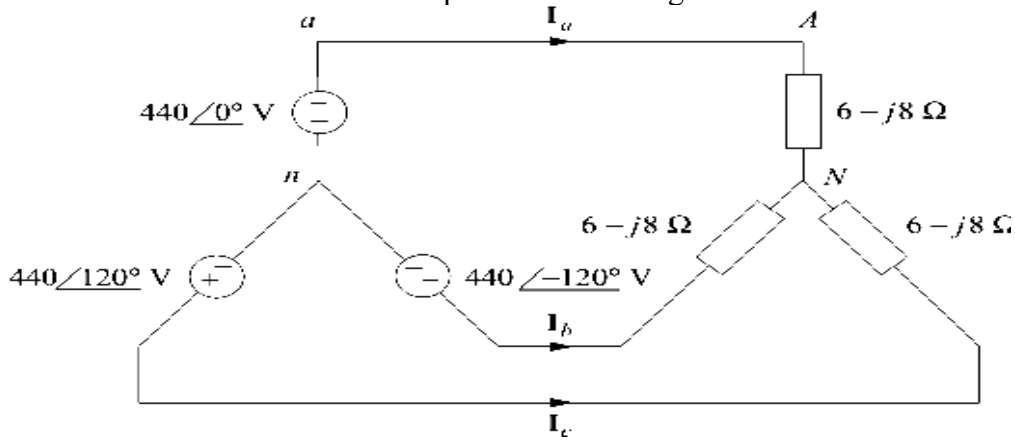
b) Find the current **i** in the circuit shown in figure using superposition theorem. 8 Marks



UNIT-IV

7 a) Derive the relation between line and phase voltages of **wye** connected polyphase system. 6 Marks

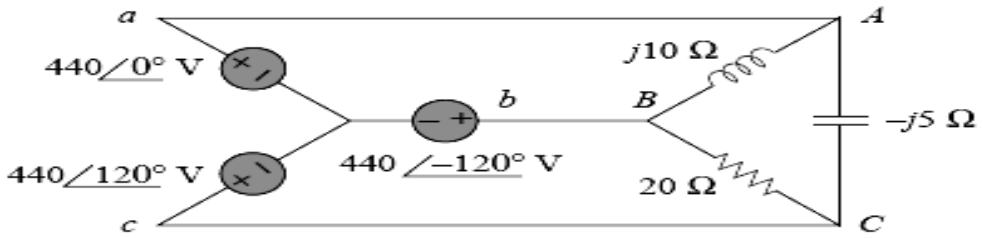
b) Obtain the line currents in the three-phase circuit of figure. 8 Marks



(OR)

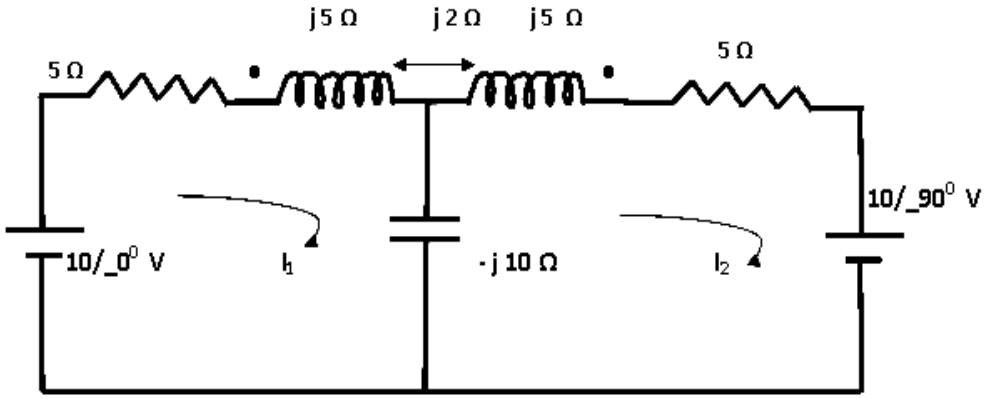
8 a) Derive the relationship between line and phase quantities (both voltages and currents) in balanced ∇-∇ polyphase systems with the phasor diagram. 7 Marks

b) Refer to the unbalanced circuit shown in figure, calculate: (i) the line currents (ii) the real power, reactive power and apparent power absorbed by the load. 7 Marks

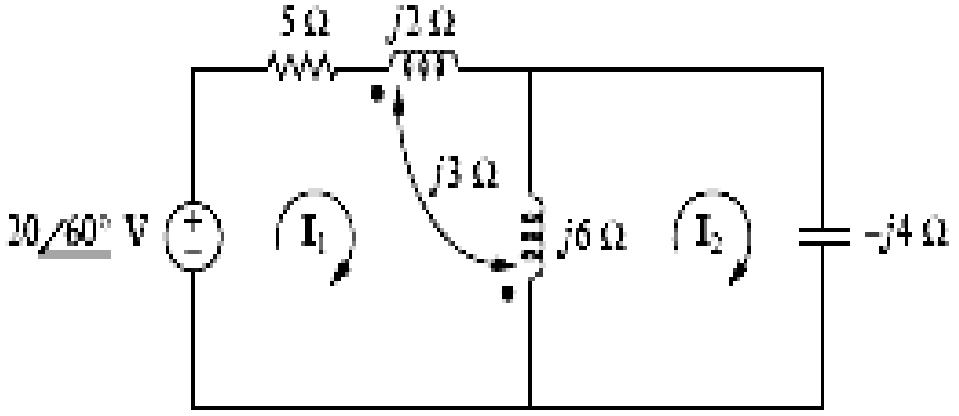


UNIT-V

9 a) For the circuit shown in figure, find the loop currents for the coupled circuits. 7 Marks

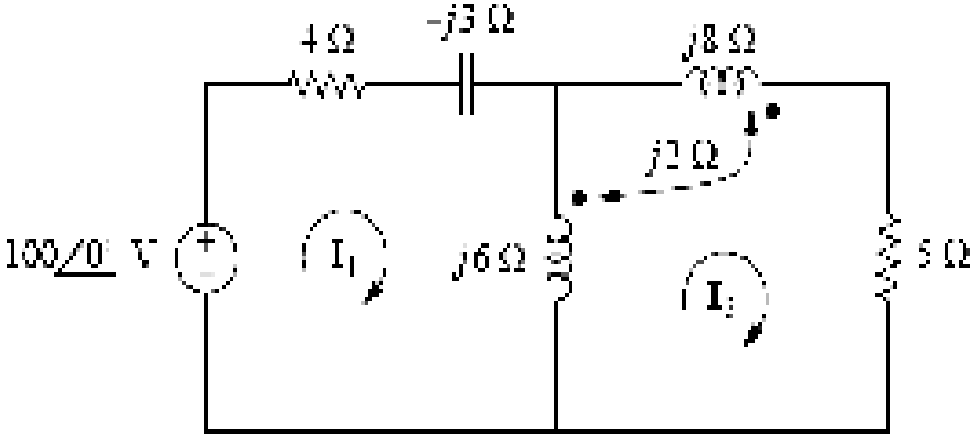


b) Determine the phasor currents I_1 and I_2 in the circuit of the figure . 7 Marks

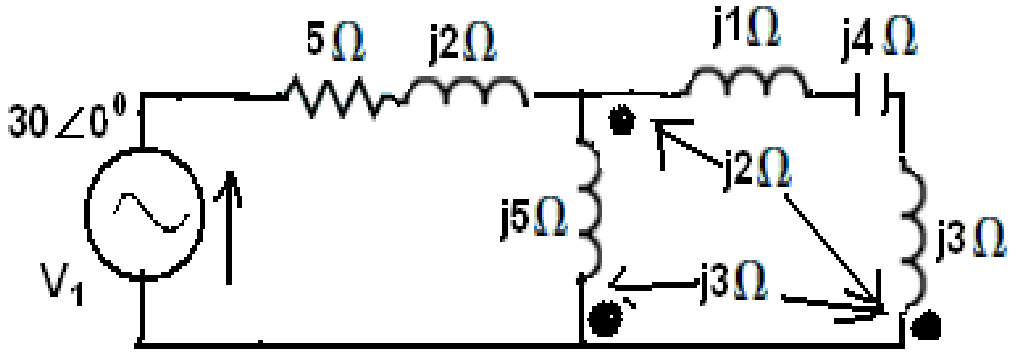


(OR)

10 a) Compute the mesh currents shown in figure and also find the voltage across j8Ω inductor. 7 Marks



b) Write the mesh equations for the network shown in figure and determine the current through 5Ω resistor. 7 Marks



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CODE No.: 16BT10241 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech I Semester (SVEC-16) Regular/Supplementary Examinations December - 2018

NETWORK ANALYSIS

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

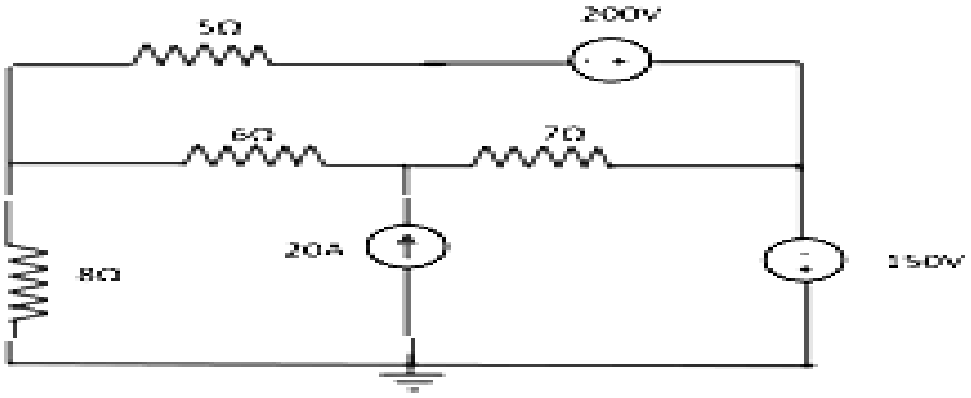
Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

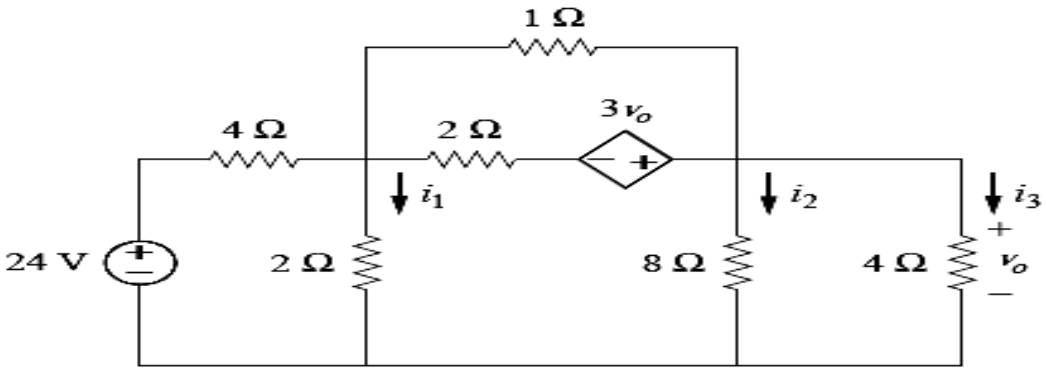
1 a) Explain the terms super mesh and super node and apply these concepts to electrical network. 7 Marks

b) Compute the voltage across the 7Ω resistor, using mesh analysis. 7 Marks



(OR)

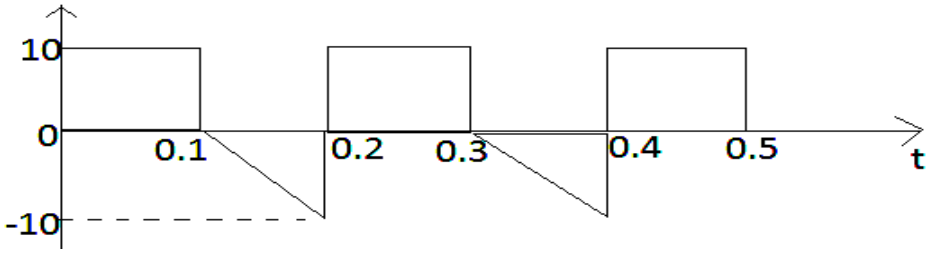
2 Determine the currents I_1 and I_2 in the circuit shown in figure using nodal analysis. 14 Marks



UNIT-II

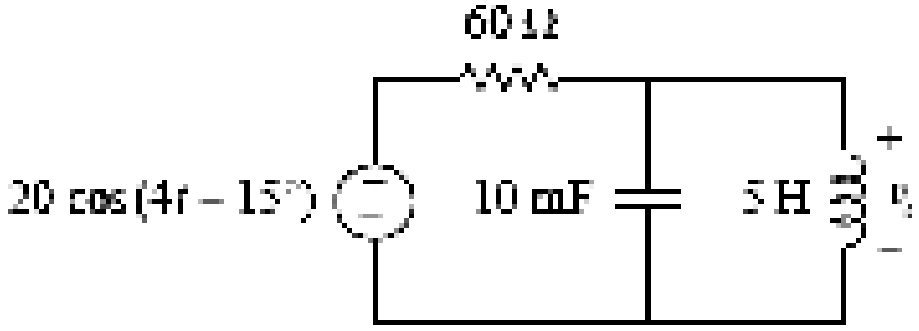
3 a) Compute active and reactive components of the current taken by a series circuit consisting of a coil of inductance 0.1H and resistance 8Ω and a capacitor of 120μF connected to a 230V, 50Hz supply mains. Find the value of the capacitor that has to be connected in parallel with the above series circuit so that the power factor of the entire circuit is unity. 7 Marks

b) Compute the effective value, average value, form factor and peak factor of the waveform shown below. 7 Marks

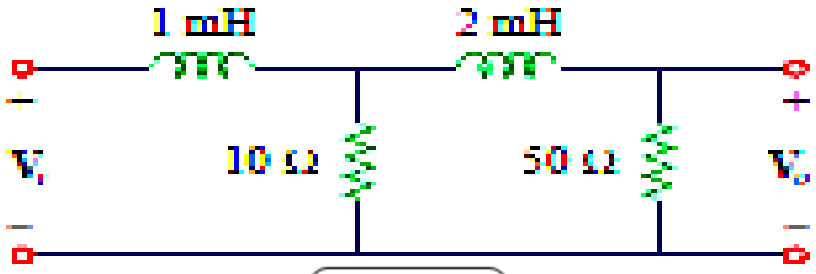


(OR)

4 a) Determine the $V_0(t)$ in the circuit shown in figure. 7 Marks

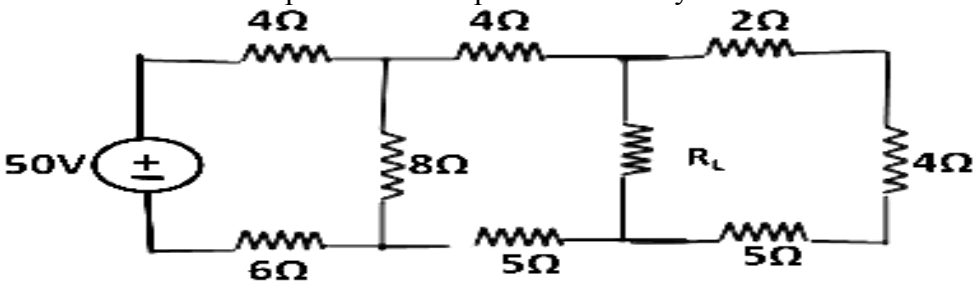


b) If 1V is applied at V_i, find the magnitude and the phase shift produced at 5kHz. Specify whether the phase shift is leading or lagging. 7 Marks

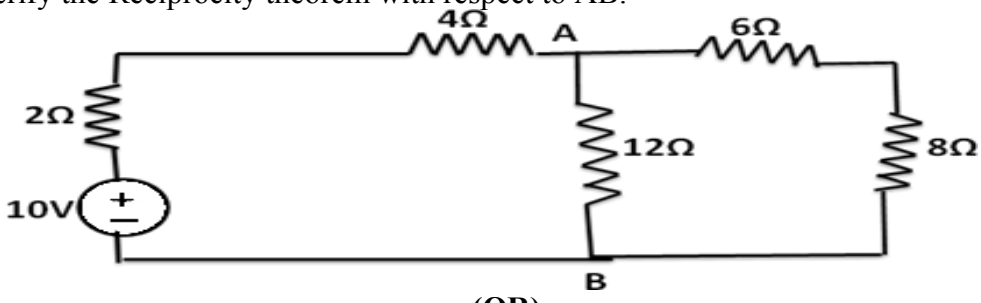


UNIT-III

5 a) Find the value of R_L for receiving maximum power from the source. Also determine the maximum power and the power efficiency. 7 Marks

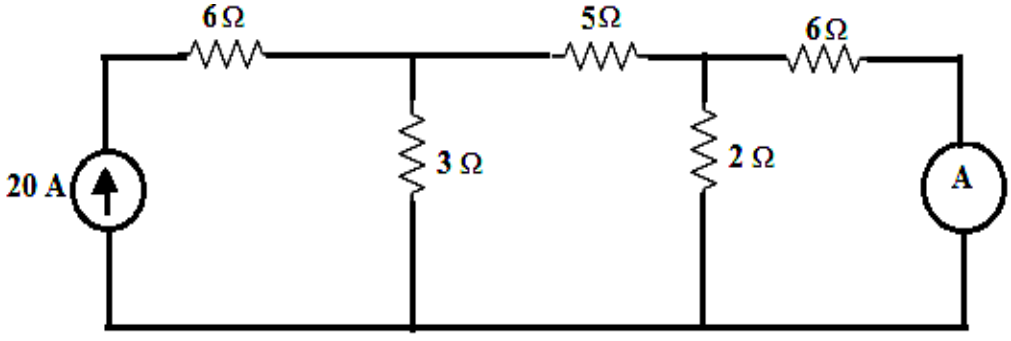


b) Verify the Reciprocity theorem with respect to AB. 7 Marks



(OR)

6 a) Using the compensation theorem, determine the ammeter reading where it is connected to 6Ω resistor as shown in figure. The internal resistance of ammeter is 2Ω. 8 Marks

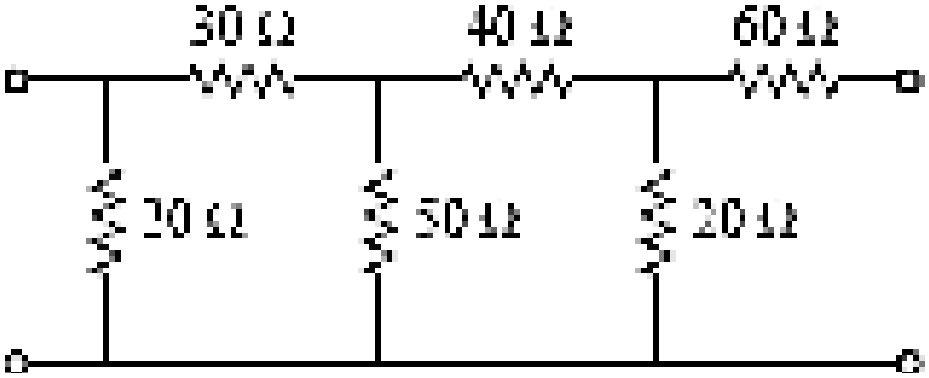


b) Explain the Tellegen's theorem with suitable example. 6 Marks

UNIT-IV

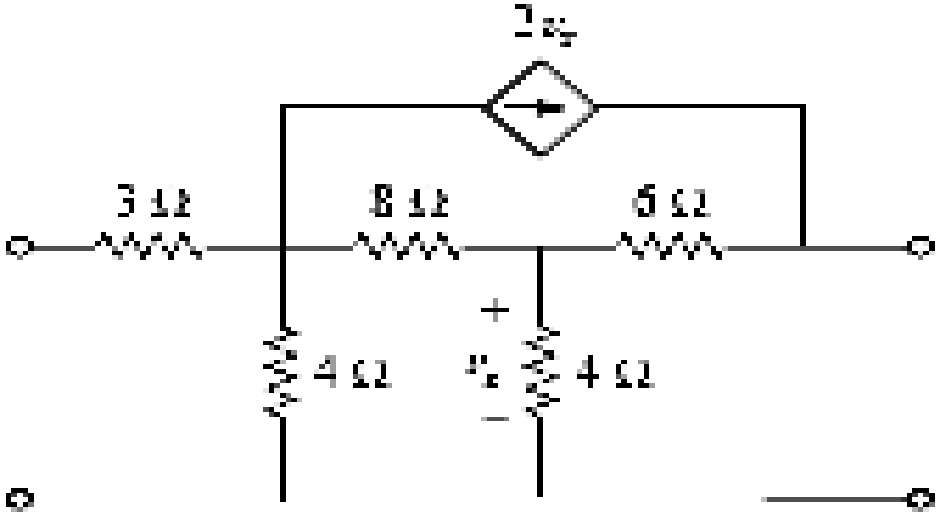
7 a) Determine the [Y] and [T] parameters of two port network, whose [Z] parameters are $[Z] = \begin{bmatrix} 6 & 4 \\ 4 & 6 \end{bmatrix}$. 7 Marks

b) Obtain the ABCD parameters for the circuit in the figure. 7 Marks



(OR)

8 a) Obtain the hybrid parameters of the two port network given below. 10 Marks



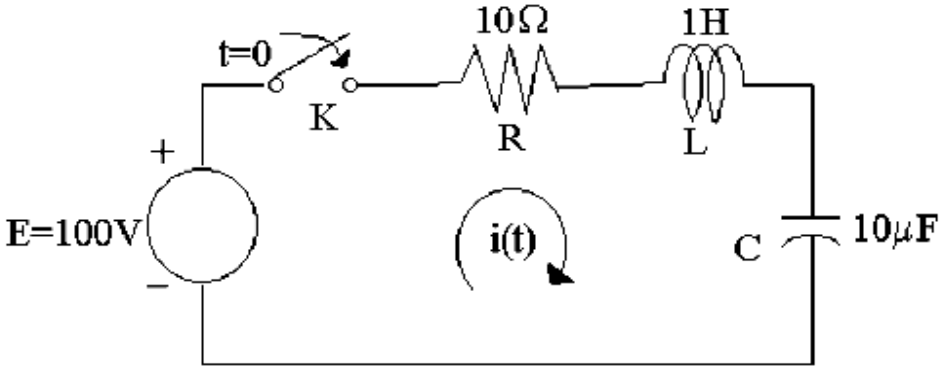
b) Convert the Hybrid parameters deduced in (a) into [Z] parameters. 4 Marks

UNIT-V

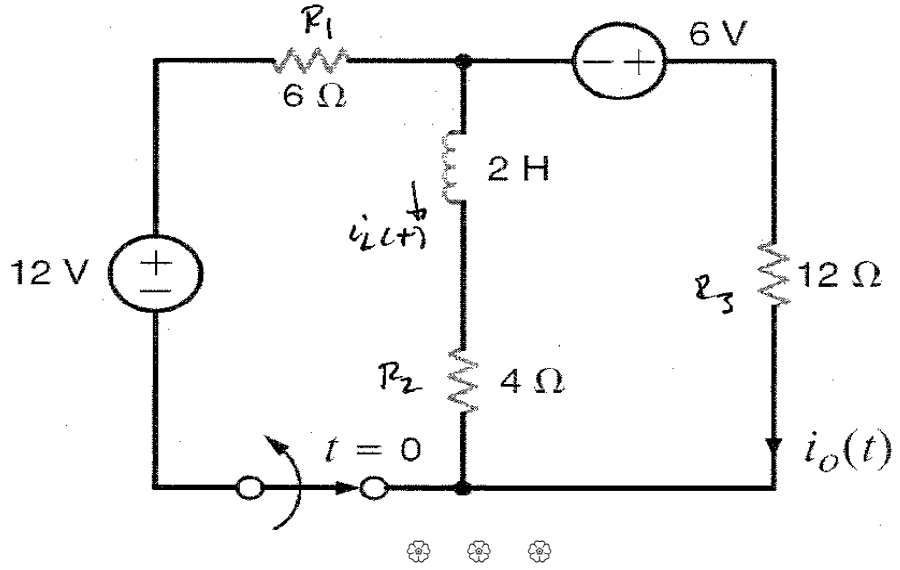
9 A series RC circuit with R = 50Ω and C = 2 micro farad has a sinusoidal voltage source **V = 150 *Sin(*500*t* φ+π/3)** volts applied at a time when **φ = 0**. Find the expression for the total current. Use Laplace transforms method 14 Marks

(OR)

10 a) For the circuit shown, the switch is closed at t = 0. If the current in L and voltage across C are zero for t<0, find $i(0^+)$, $\left.\frac{di(t)}{dt}\right|_{t=0+}$, $\left.\frac{d^2i(t)}{dt^2}\right|_{t=0+}$ and also compute the i(t) at t>0. 7 Marks



b) Compute the response $i_L(t)$ for $t > 0$ in the circuit shown below. Plot the response including time interval just prior to switching action. 7 Marks



CODE No.: 16BT10501 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech I Semester (SVEC-16) Regular/Supplementary Examinations December - 2018

PROGRAMMING IN C

[Civil Engineering, Electrical and Electronics Engineering, Mechanical Engineering, Electronics and Communication Engineering, Computer Science and Engineering, Electronics and Instrumentation Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) What is an array variable? How does an array variable differ from an ordinary variable? 7 Marks

b) Summarize the rules that apply to all numeric-type constants. 7 Marks

(OR)

2 a) What is an operator? Describe different types of operators that are included within the 'C' language. 7 Marks

b) Describe the use of the conditional operator to form conditional expressions. How is a conditional expression evaluated? 7 Marks

UNIT-II

3 a) Determine which conversion characters are available with your particular version of 'C'. Also determine which flags are available for data output. 8 Marks

b) Write a program that generates the same floating-point output in two different forms. 6 Marks

(OR)

4 a) Write a short notes on gets() and puts() functions with suitable examples. 7 Marks

b) Write a 'C' program to calculate electricity bill using else-if ladder. Read the starting and ending meter readings. The charges are as follows. 7 Marks

No. of Units	Consumed rates in (Rs.) per unit
0 - 50	1.50
51 - 100	2.00
101 - 150	2.50
151 - 200	2.75
> 200	3.00

UNIT-III

5 a) Write a program for addition of two given matrices using functions to read, display and multiply the matrices. 7 Marks

b) Suppose function F1 calls function F2 within a 'C' program. Does the order of the function definitions make any difference? Explain. 7 Marks

(OR)

6 a) List any four special operators and explain the significance of address of (&) operator and Indirection (*) operator with an example program. 7 Marks

b) How can a list of strings be stored within a two-dimensional array? How can the individual strings be processed? What library functions are available to simplify string processing? 7 Marks

UNIT-IV

7	a)	List the advantages of Pointers. Write a program to illustrate the concept of Pointer Arithmetic and Pointer Expressions.	7 Marks
	b)	Develop a program to read two strings **str1** and **str2** and then find out whether the string **str2** is the substring of **str1** or not. If it is a substring then print the position where it appeared.	7 Marks

(OR)

8	a)	What is the relationship between an array name and a pointer? How is an array name interpreted when it appears **as** an argument to a function?	7 Marks
	b)	Develop a program to read a line of text and then convert that long text into a long string.	7 Marks

UNIT-V

9	a)	What is Self-Referential Structure? Explain.	7 Marks
	b)	Write a 'C' program to determine the frequency of letters in a given string. (Note: Use Structure to represent words).	7 Marks

(OR)

10	a)	Describe the significance of Files and explain the mixed data oriented functions in Files. Write a program to create a File consisting of employees' details.	7 Marks
	b)	Define a structure DATE with the fields: day, month and year. Define another structure STUDENT whose fields are roll number, name, height and date of birth which is a structure of the type DATE. Write a program to read and display the information.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech I Semester (SVEC-16) Supplementary Examinations May - 2019

ENGINEERING CHEMISTY

[Civil Engineering, Mechanical Engineering, Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Max. Marks: 70

Time: 3 hours

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Discuss briefly about boiler troubles and methods to be adapted for their treatment.	14 Marks
		(OR)	
2	a)	Explain Nalgonda method used for defluoridation of water and list out the merits and demerits of various deflouridation methods.	7 Marks
	b)	What is the threshold level of fluoride in ground water? Discuss the adverse effects of fluorides on human health	7 Marks

UNIT-II

3	a)	Explain the conduction mechanism of any one conjugated conducting polymer.	7 Marks
	b)	Discuss the engineering applications of the engineering plastics and bio-degradable polymers.	7 Marks
		(OR)	
4	a)	What are composite materials? Discuss important types of fibre-reinforced composites.	7 Marks
	b)	Distinguish between fibre and particle-reinforced composites.	7 Marks

UNIT-III

5		Design the synthesis of nanomaterials by Sol-Gel method with a neat sketch.	14 Marks
		(OR)	
6		Write the twelve principles of green chemistry and evaluate their role on chemistry and environment.	14 Marks

UNIT-IV

7		Classify the sensors with examples and give the applications of electrochemical sensor.	14 Marks
		(OR)	
8	a)	Explain the difference between a rechargeable battery and a dry cell. Use Ni-Cd battery and dry cell as examples.	6 Marks
	b)	Compare alkaline fuel cell, solid oxide fuel cell and bio-fuel cell.	8 Marks

UNIT-V

9	a)	Define flash point and fire point of a lubricant and explain their significance.	7 Marks
	b)	Illustrate semi-solid lubricants with their uses.	7 Marks
		(OR)	
10	a)	Explain the electrochemical mechanism of rusting of iron in humid atmosphere.	6 Marks
	b)	Discuss the electroplating method.	8 Marks

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CODE No.: 16BT1BS02 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech I Semester (SVEC-16) Supplementary Examinations May - 2019

ENGINEERING PHYSICS

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Classify optical fibers basing on number of modes with neat diagrams.	8 Marks
	b)	State the advantages of optical fiber communication over conventional copper cables.	4 Marks
	c)	A silica glass fiber has a core refractive index of 1.5 and cladding refractive index of 1.45. Calculate: i) Critical angle for the core cladding interface. ii) The numerical aperture of the fiber.	2 Marks

(OR)

2	a)	Outline the characteristic of laser and state the necessary conditions for attaining proper lasing action.	5 Marks
	b)	What is principle involved in optical fiber? Name the types of optical fibers. Derive the expression for Numerical aperture.	9 Marks

UNIT-II

3	a)	Explain the Fermi-Dirac distribution function of electrons.	7 Marks
	b)	Show that the wavelength λ associated with an electron of mass 'm' and kinetic energy 'E' is given by $\lambda = \frac{h}{\sqrt{2mE}}$.	7 Marks

(OR)

4		Explain Kronig-Penney model.	14 Marks

UNIT-III

5	a)	Obtain an expression for an internal field seen by an atom in an infinite array of atoms subjected to external field.	11 Marks
	b)	Find the diffusion coefficient of electron in silicon at 300K, if mobility of electron is 0.29 m^2/Vs.	3 Marks

(OR)

6	a)	Define ionic polarization. Deduce the expression for ionic polarization in dielectrics.	8 Marks
	b)	Explain orientation polarization.	6 Marks

UNIT-IV

7	a)	Elaborate Meissner effect.	7 Marks
	b)	Explain Penetration depth and Flux quantization.	7 Marks

(OR)

8	a)	Describe the BCS theory of superconductivity.	9 Marks
	b)	What are cooper pairs?	2 Marks
	c)	Calculate the critical current for a lead wire of 0.5mm radius at 4.2K. Lead has a critical temperature 7.18K and $H_o = 6.5 \times 10^4 Am^{-1}$.	3 Marks

UNIT-V

9 a) How X-rays are suitable in determination of crystal structure. 4 Marks

b) State and explain Bragg's law for diffraction in crystals. Calculate the glancing angle at (110) plane of a cubic crystal having lattice constant of 0.26nm corresponding to the second order diffraction maximum for the X-rays having wavelength of 0.65nm. 10 Marks

(OR)

10 a) Describe the principle of nano materials. List any few applications of nano materials. 10 Marks

b) What is the angle at which the third-order reflection of X-rays of 0.79Å wavelength can occur in a calcite crystal of 3.04×10^{-10} spacing? 4 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech I Semester (SVEC-16) Supplementary Examinations, May - 2019

MATRICES AND NUMERICAL METHODS

[Civil Engineering, Electrical and Electronics Engineering, Mechanical Engineering, Electronics and Communication Engineering, Computer Science and Engineering, Electronics and Instrumentation Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Reduce the matrix $\begin{bmatrix} 1 & 1 & 2 \\ 1 & 2 & 3 \\ 0 & -1 & -1 \end{bmatrix}$ in to its normal form and hence evaluate its rank. 7 Marks

b) Find the Eigen values and Eigen vectors of the matrix $A=\begin{bmatrix} 1 & 1 & 3 \\ 1 & 5 & 1 \\ 3 & 1 & 1 \end{bmatrix}$. 7 Marks

(OR)

2 Reduce the quadratic form $3x^2 + 2y^2 + 3z^2 - 2xy - 2yz$, to the normal form by an orthogonal reduction. Also identify its nature, rank, signature and index. 14 Marks

UNIT-II

3 a) By using Regula-Falsi method, estimate an approximate root of the equation $x^4 - x - 10 = 0$ that lies between 1.8 and 2. Carry out three approximations. 7 Marks

b) Apply the method of least squares, fit a relation of the form $y = a\,e^{bx}$ to the following data: 7 Marks

x	2	3	4	5	6
y	144	172.8	207.4	248.8	298.5

(OR)

4 a) Design a recurrence formula for the reciprocal of a natural number N by Newton-Raphson's method and hence find the reciprocal of 18. 7 Marks

b) Using method of false position, find an approximate root for the equation $x \log_{10} x = 1.2$ near to 2.5. 7 Marks

UNIT-III

5 a) State Newton's backward interpolation formula and using it evaluate *cos* 73° from the following data: 7 Marks

x^o	10	20	30	40	50	60	70	80
$\cos x^o$	0.9848	0.9397	0.8660	0.7660	0.6428	0.5000	0.3420	0.1737

b) State Lagrange's interpolation formula and using it, find the value of y when $x=10$ from the following data: 7 Marks

x	5	6	9	11
y	12	13	14	16

(OR)

6 a) The following table gives corresponding values of x and y. Construct the difference table and then express y as a function of x, using Newton's forward difference formula: 7 Marks

x	0	1	2	3	4
y	3	6	11	18	27

b) Find the interpolation polynomial for the following data by Newton's backward interpolation method. 7 Marks

x	0	1	2	5
$f(x)$	2	3	12	147

UNIT-IV

7 a) The following table gives the velocity **v** of a particle at time **t**: 7 Marks

t (seconds) :	0	2	4	6	8	10	12
v (m/sec) :	4	6	16	34	60	94	136

Find the acceleration at **t** = 2 seconds.

b) 7 Marks

Apply Simpson's 1/3rd rule to evaluate $\int_0^{0.6} e^{-x^2}\,dx$ by taking seven ordinates.

(OR)

8 a) The following data gives corresponding values of pressure **p** and specific volume **v** of a super heated steam. 7 Marks

v	2	4	6	8	10
p	105	42.7	25.3	16.7	13

Find the rate of change of pressure with respect to volume when **v** = 2.

b) The velocity (**v**) of a particle at distance (**s**) from a point on its path is given by the table: 7 Marks

s (ft)	0	10	20	30	40	50	60
v(ft/sec)	47	58	64	65	61	52	38

Estimate the time taken to travel 60 ft by using Simpson's 3/8 rule.

UNIT-V

9 Solve, by the modified Euler method, the initial value problem $\frac{dy}{dx} = y + x$; 14 Marks

y(0) = 0, choose h = 0.2 and compute y(0.4), y(0.6).

(OR)

10 Find y(0.5), y(1), given that dy/dx = x-y, y(0)=1, with h = 0.5 using modified Euler method. 14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech I Semester (SVEC-16) Supplementary Examinations May - 2019

MULTIVARIABLE CALCULUS AND DIFFERENTIAL EQUATIONS
[Civil Engineering, Electrical and Electronics Engineering, Mechanical Engineering, Electronics and Communication Engineering, Computer Science and Engineering, Electronics and Instrumentation Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Design a mathematical equation of the family of orthogonal trajectories to the curves $a\,y^2 = x^3$ where a is the parameter. 7 Marks

b) Check whether the two families of curves given by $x^2 - y^2 = a^2$ and $xy = c^2$ are mutually orthogonal to each other or not and justify your answer. 7 Marks

(OR)

2 a) Obtain the solution of the differential equation $\left(1 + y^2\right)dx = \left(\tan^{-1} y - x\right)dy$. 7 Marks

b) A pot of boiling water 100^0 C is removed from the fire and allowed to cool at 30^0 C room temperature. Two minutes later, the temperature of the water in the pot is 90^0 C. Determine the temperature of the water after 5 minutes. 7 Marks

UNIT-II

3 a) Determine the solution of $\left(D^2 - 5D + 6\right)y = xe^{4x}$. 7 Marks

b) Apply the method of variation of parameters to solve $\frac{d^2y}{dx^2} + y = \operatorname{cosec} x$. 7 Marks

(OR)

4 a) Determine the solution of $\left(D^2 + 2D + 1\right)y = x\cos x$. 7 Marks

b) Apply the method of variation of parameters and obtain the solution of $(D^2 - 2D)y = e^x \sin x$. 7 Marks

UNIT-III

5 a) Investigate the maxima and minima, if any, of the function $f(x) = x^3y^2(1 - x - y)$. 7 Marks

b) A rectangular box open at the top is to have volume of 32 cubic ft. Obtain the dimensions of the box requiring least material for its construction. 7 Marks

(OR)

6 a) Compute the volume of the largest rectangular parallelopiped that can be inscribed in the ellipsoid $\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1$. 7 Marks

b) Obtain the points on the surface $z^2 = xy + 1$ that are nearest to the origin. 7 Marks

UNIT-IV

7 a) Evaluate the following integral by the technique of transforming into polar coordinates $\int_0^a \int_0^{\sqrt{a^2-x^2}} y\sqrt{x^2+y^2}\,dxdy$. 7 Marks

b) Evaluate $\iint_R (1-\frac{x^2}{a^2}-\frac{y^2}{b^2})dxdy$ over the first quadrant of the ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$ using the transformations x = au and y = bv. 7 Marks

(OR)

8 a) Compute the perimeter of the loop of the curve $3ay^2 = x(x-a)^2$. 7 Marks

b) Evaluate the integral $\int_0^3 \int_1^{\sqrt{4-y}} (x+y)dxdy$ by changing the order of integration. 7 Marks

UNIT-V

9 a) Verify the vector identity $\Delta^2(r^n) = n(n+1)r^{n-2}$ 7 Marks

b) Apply Gauss Divergence theorem for the vector function $F = yi + xj + z^2k$ over the cylinder region bounded by $x^2 + y^2 = 9, z = 0$ and $z = 2$. 7 Marks

(OR)

10 a) If $f = (x^2 + y^2 + z^2)^{-n}$, then evaluate div (grad f) and further determine n if div (grad f) = 0. 7 Marks

b) Apply Stokes theorem to evaluate $\oint_C [(x+y)dx(2x-z)dy + (y+z)dz]$ where C is the boundary of the triangle with vertices (2,0,0), (0,3,0) and (0,0,6). 7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech I Semester (SVEC-16) Supplementary Examinations May - 2019

TECHNICAL ENGLISH

[Civil Engineering, Mechanical Engineering, Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 What does the term 'communication' imply? Why is effective communication vital in today's world? 14 Marks

(OR)

2 How important is effective communication in today's business word? Provide certain guidelines for effective communication and discuss a few aspects of business where communication is very important. 14 Marks

UNIT-II

3 Differentiate listening from hearing and discuss the common myths of listening. 14 Marks

(OR)

4 Distinguish between Listening for general content and listening for specific information. 14 Marks

UNIT-III

5 Differentiate between task-oriented speaking and interpersonal speaking. 14 Marks

(OR)

6 List the features of semi-formal and informal speaking. Explain the following terms: 14 Marks

i) Elision. ii) Reduction.
iii) Assimilation. iv) Contraction.

UNIT-IV

7 Provide guidelines to enhance reading rate. 14 Marks

(OR)

8 What are the different ways in which the word's meaning can be deduced from the context? 14 Marks

UNIT-V

9 What is impersonal and formal writing? Explain their role in technical writing with the help of examples. 14 Marks

(OR)

10 a) Discuss the variety of sentences in writing. 7 Marks

b) How does the target audience affect the use of language? Give a sentence with a variation according to the audience. 7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech I Semester (SVEC-16) Supplementary Examinations May - 2019

ELECTRICAL CIRCUITS

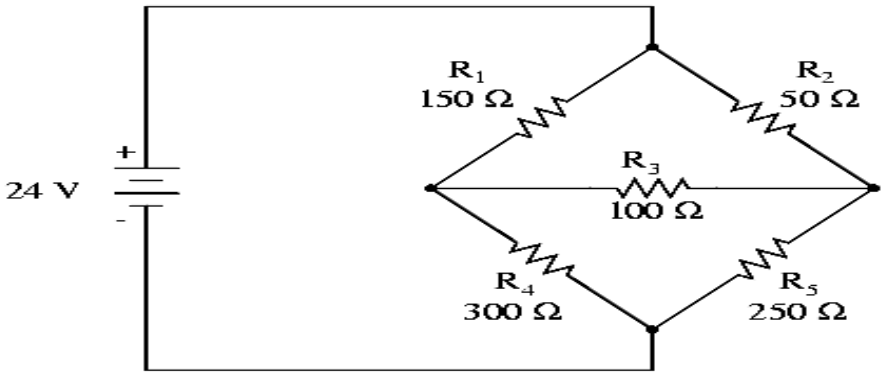
[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

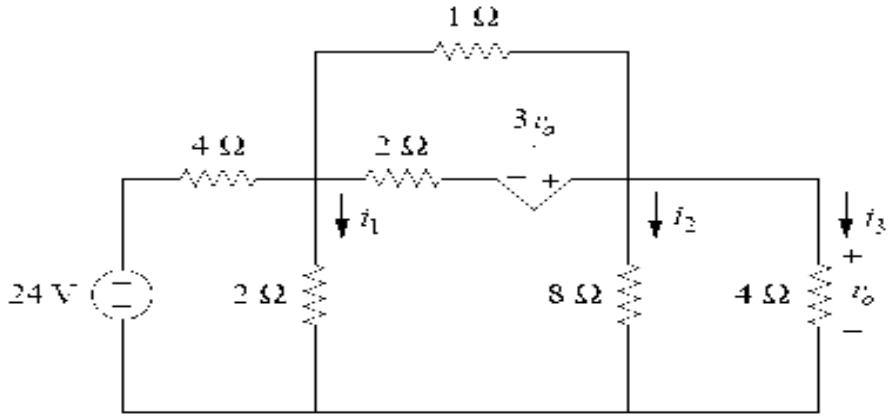
Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Compute the current delivered by 24V source and voltage across 100Ω resistor using mesh analysis for the circuit shown in figure. 7 Marks

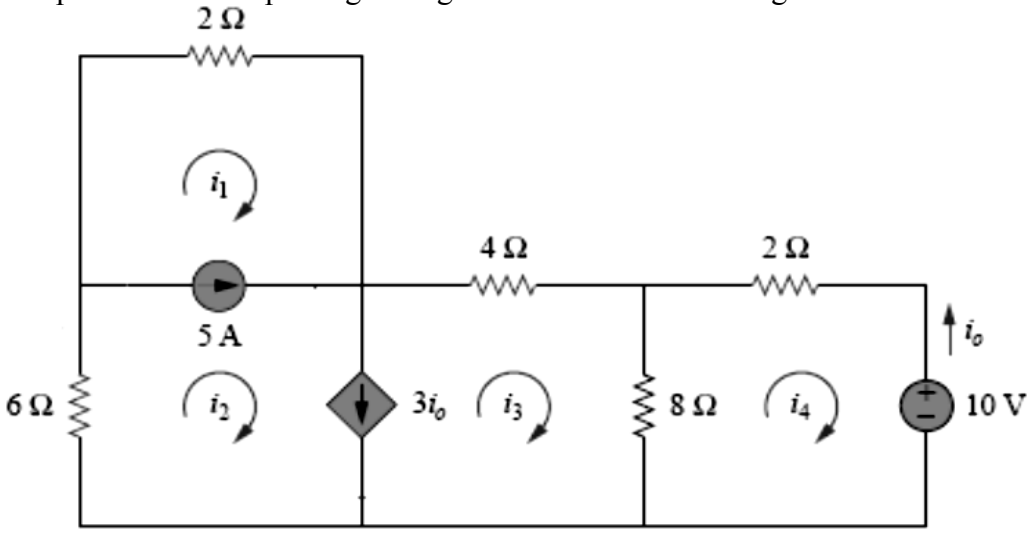


b) Using nodal analysis for the circuit shown in figure, determine i_1, i_2 and i_3. 7 Marks

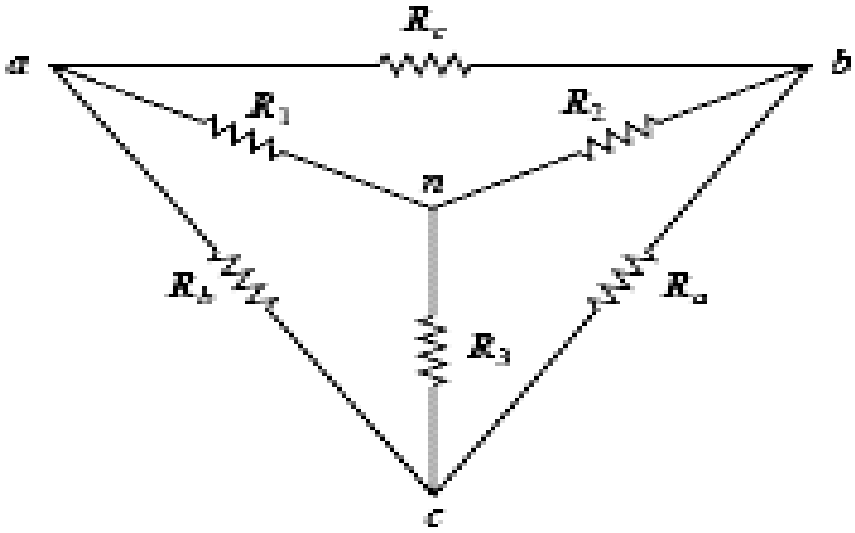


(OR)

2 a) Compute the current passing through 6Ω resistor shown in figure. 7 Marks



b) Derive the expression for R_a, R_b and R_c in terms of R_1, R_2 and R_3 shown in figure below. 7 Marks



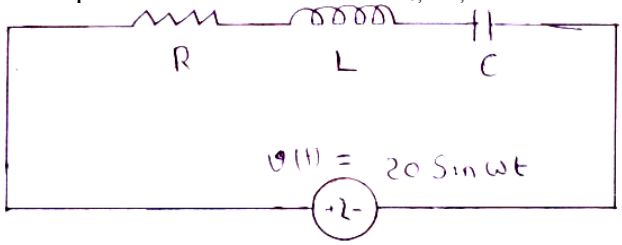
UNIT-II

3 a) In the circuit shown in figure, R = 2Ω, L = 1mH and C = 0.4μF. 7 Marks

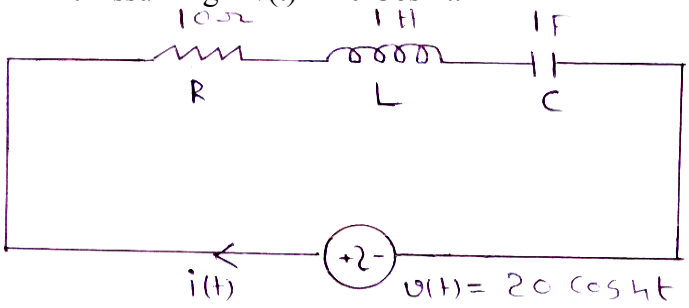
(i) Find resonant frequency (w_0), and the half power frequencies (w_1, w_2).

(ii) Calculate the quality factor (Q) and band width (BW).

(iii) Determine the amplitude of the current at w_0, w_1, w_2.

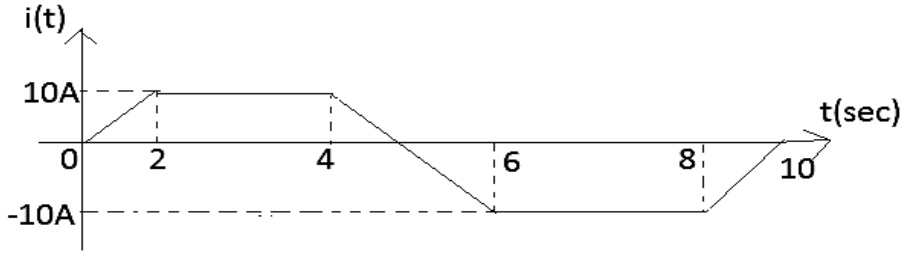


b) Calculate the value of i(t) for given circuit shown in figure , where R=10Ω, L = 1H and C = 1F. Assuming v(t) = 20 Cos 4t. 7 Marks



(OR)

4 a) A pure inductor of 3 mH carries a current of the waveform shown in the figure. Determine the values of v(t) and p(t) and sketch the voltage waveform. 7 Marks



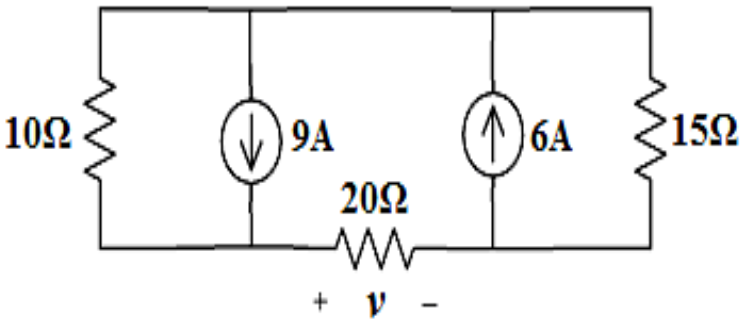
b) Find the circuit elements if the applied voltage and currents are v(t) = 50sin(2000t+65⁰) V and i(t) = 8sin(2000t+95⁰) A. Find impedance and Phasor diagram. 7 Marks

UNIT-III

5 a) State and explain the Norton's theorem. 7 Marks

b) In the circuit shown below, find the voltage across the 20Ω resistor using 7 Marks

Superposition theorem.



(OR)

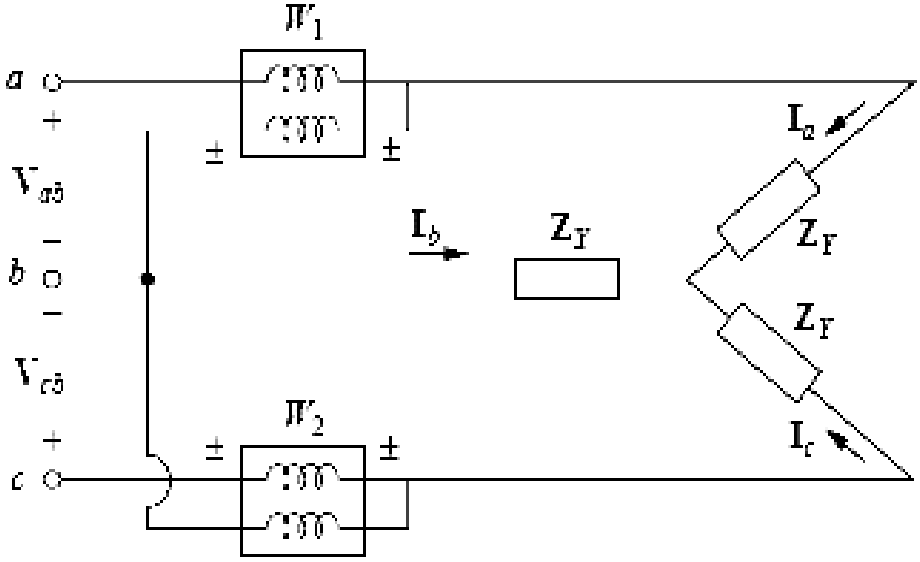
6 State and explain maximum power transfer theorem and derive the necessary conditions for maximum power transfer for DC and AC excitations. 14 Marks

UNIT-IV

7 a) A 400V, 3-phase, 3-wire balanced star connected supply feeds an unbalanced three wire, star-connected load. The branch impedances of the load are ZRY=10 ∠30 Ω, ZYB = 25∠0 Ω and ZBR = 20∠-30 Ω. Find the line currents and voltage across each phase impedance. Assume RYB phase sequence. Also find the power consumed by the load. 8 Marks

b) Let the line voltage V_{ab}=208V and the wattmeter readings of the balanced system in figure be W_1 =-560W and W_2 = 800W. Determine: 6 Marks

i) the total reactive power.
ii) the power factor.
iii) whether the impedance is inductive or capacitive?



(OR)

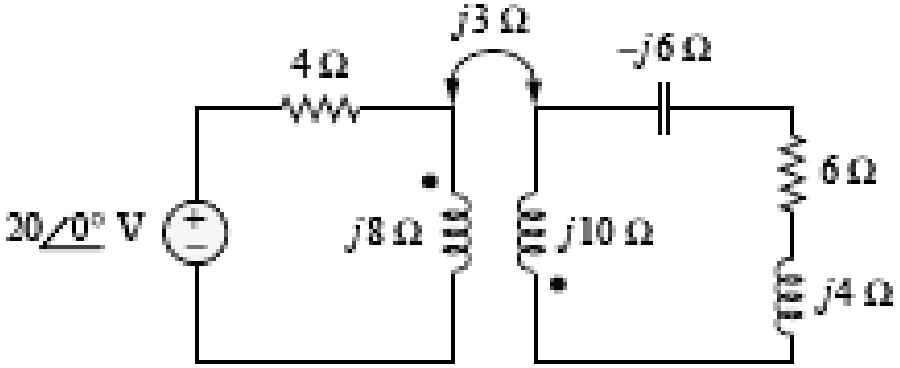
8 Three identical coil having impedance of (17.32 + j10)Ω each are connected in star across a 3-phase, 50Hz, 400V supply. Find: 14 Marks

i) the total power supplied.
ii) power factor of the load.
iii) if same coils are now connected in delta, calculate the total power taken by the load. Comment on result.

UNIT-V

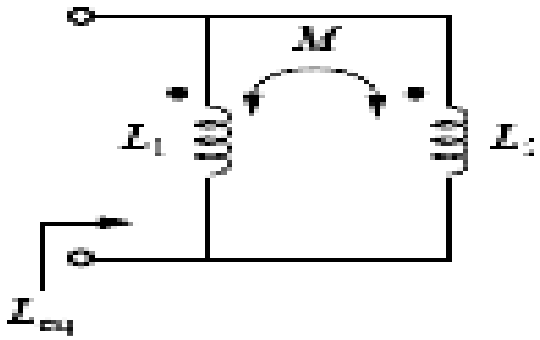
9 a) Find the input impedance of the circuit shown in figure, and current delivered 7 Marks

from source.



Figure

b) Derive the equivalent inductance L_{eq} shown in figure. 7 Marks



(OR)

10 a) For the coupled coils shown in figure, show that $L_{eq} = L_1 + L_2 + 2M$ 6 Marks

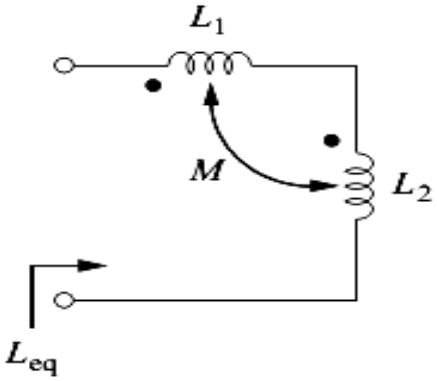


Fig. 2

b) Two coils connected in series-aiding fashion have a total inductance of 250mH. When connected in a series-opposing configuration, the coils have a total inductance of 150mH. If the inductance of one coil (L_1) is three times the other, find and *M*. What is the coupling coefficient? 8 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech I Semester (SVEC-16) Supplementary Examinations May - 2019

NETWORK ANALYSIS

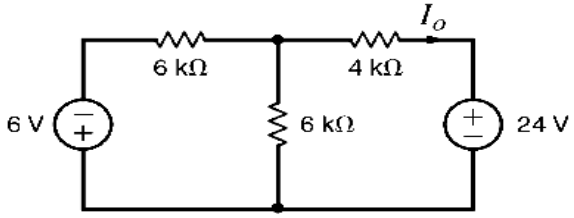
[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

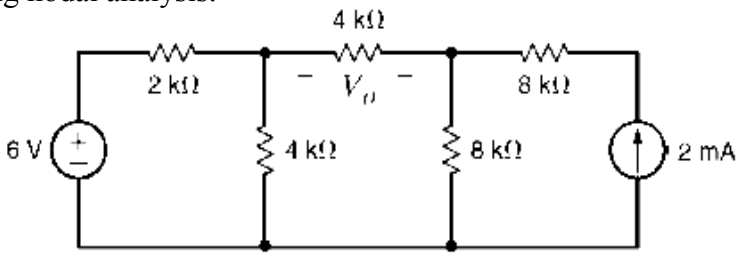
Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Find Io in the below circuit using nodal analysis. 6 Marks

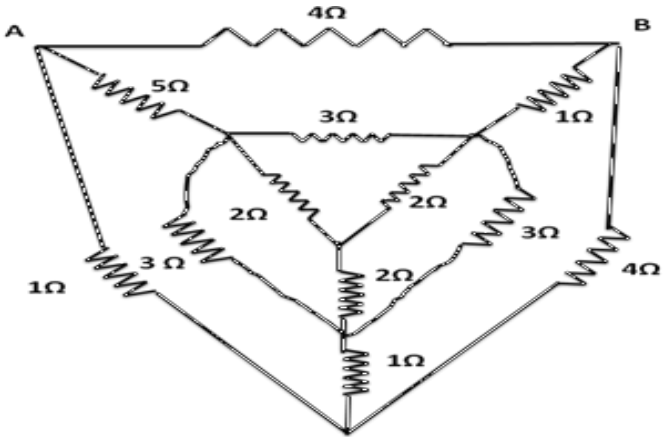


b) Find V_0 using nodal analysis. 8 Marks

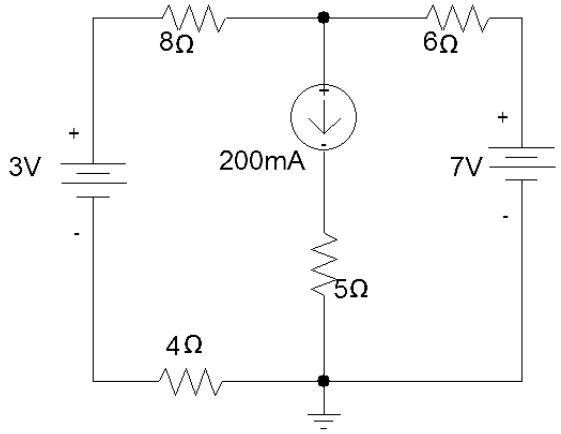


(OR)

2 a) Find the equivalent resistance across AB for the network shown below. 7 Marks



b) Write the node - voltage equations for the circuit shown below, solve the current passing through 8Ω resistor. 7 Marks



UNIT-II

3 a) An impedance Z_1= (23+j10) Ω is connected in parallel with another impedance of resistance 7.5Ω and variable capacitance connected in series. Find capacitance 'C' such that the circuit is resonant at 4kHz. 7 Marks

b) A Series RLC circuit having pure resistance of 30Ω, pure inductance of 60.07mH and a capacitor is connected across a 230V, 60Hz AC supply. This RLC combination draws a current of 12A. Calculate: 7 Marks

i) Capacitance Value.

ii) Total Active and reactive powers.

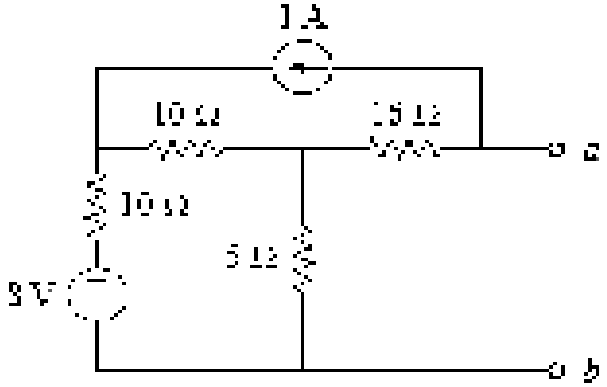
(OR)

4 a) Bring out the differences between series and parallel resonance. 7 Marks

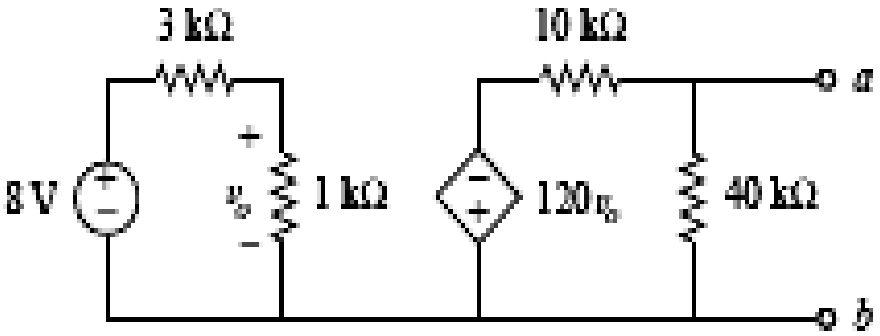
b) A series RLC circuit consists of resistance R = 20Ω, inductance L=0.01H and capacitance C = 0.04μF. Calculate the frequency at resonance. If a 10 Volts AC voltage, with a frequency equal to the frequency of resonance is applied to this circuit, calculate the values of V_C and V_L across C and L respectively. Find the frequencies at which these voltages V_C and V_L are maximum. 7 Marks

UNIT-III

5 a) Obtain the Thevenin's equivalent circuit across the terminals *a* and *b*. 7 Marks

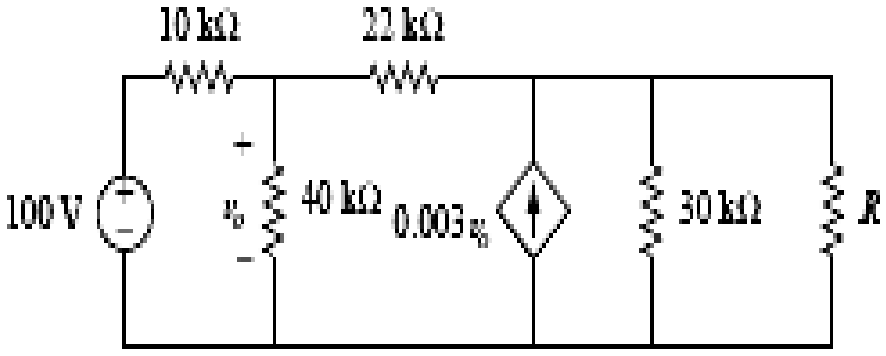


b) For the circuit in the figure, what should be the resistor connected across the terminals a – b that will absorb the maximum power from the circuit and also determine the maximum power. 7 Marks

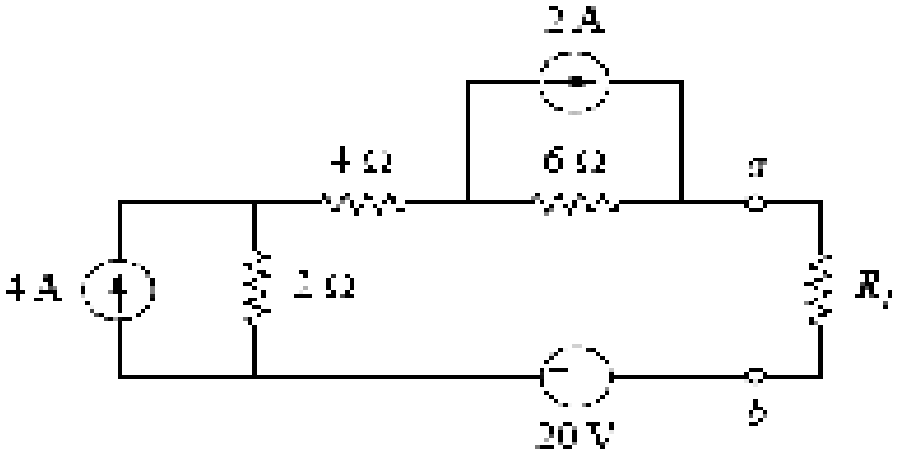


(OR)

6 a) Find the maximum power that can transfer to resistor R in the circuit. 7 Marks

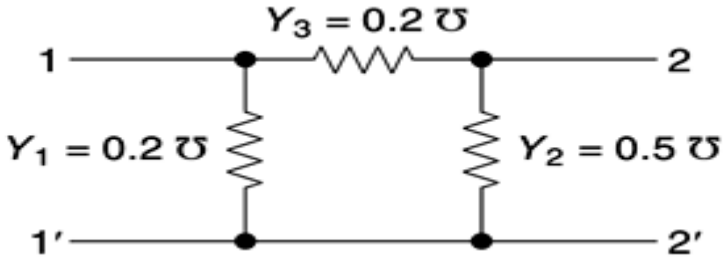


b) For the circuit in the figure, obtain the Thevenin's equivalent across the terminals a-b. Calculate the current if $R_L = 8\ \Omega$. 7 Marks

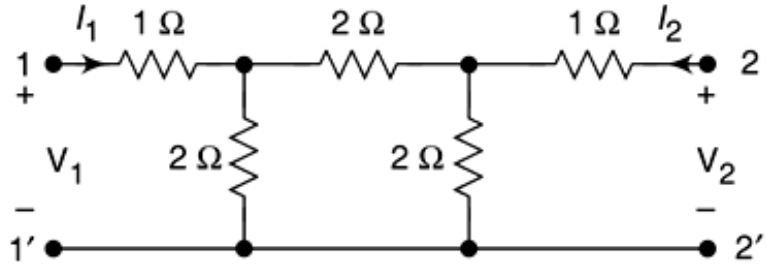


UNIT-IV

7 a) Compute the equivalent T – network for the π - network shown in figure. 6 Marks

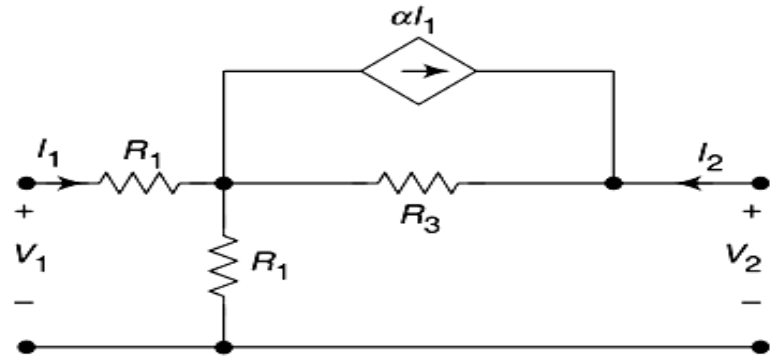


b) For the network shown in figure, determine the ABCD parameters. 8 Marks

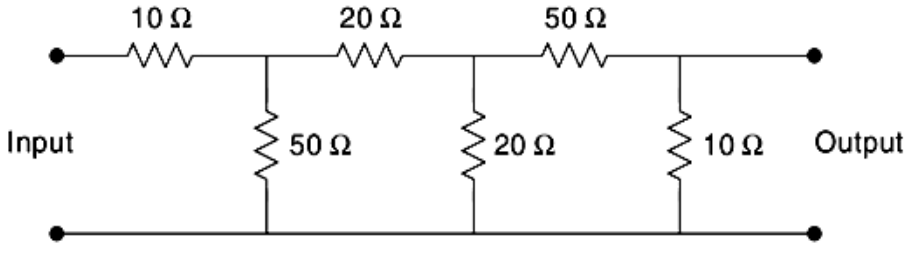


(OR)

8 a) Find the hybrid parameters of the network shown in figure. 6 Marks

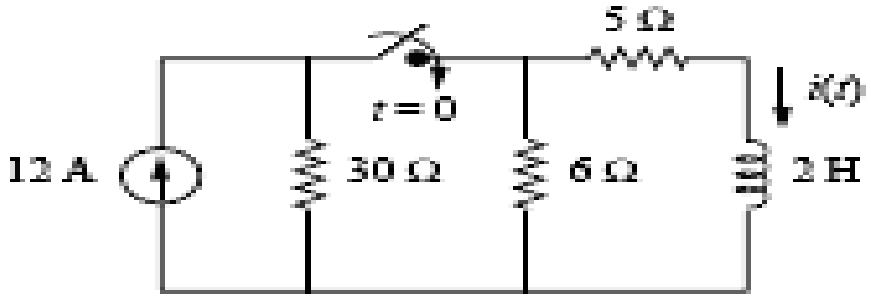


b) Obtain the ABCD parameters of the network shown in figure, using cascade connection. 8 Marks

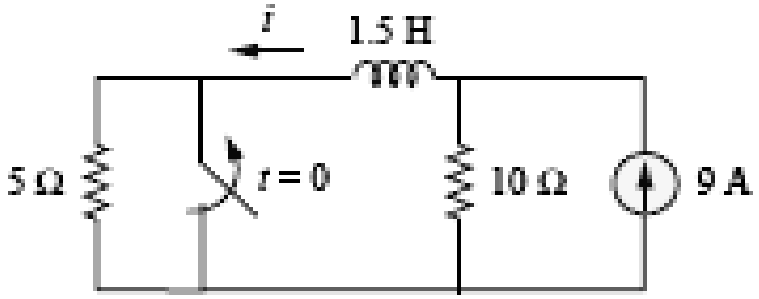


UNIT-V

9 a) The switch in Figure was open since long time but closed at t=0. If i(0) = 10 A, find i(t) for t>0. 7 Marks

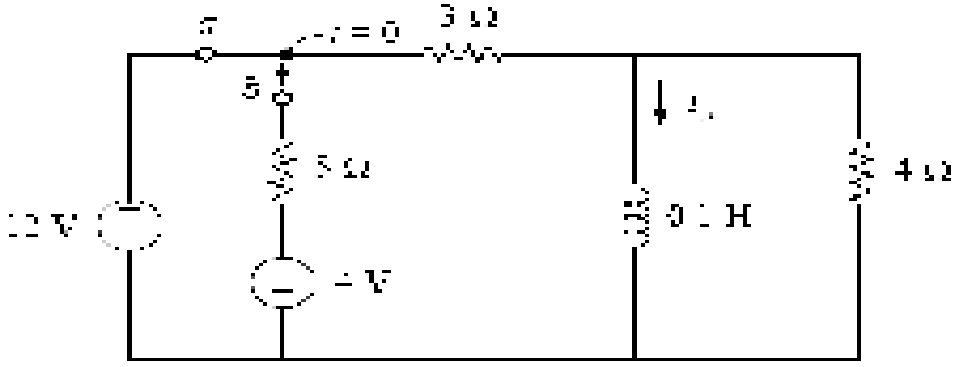


b) The switch in figure has been in closed position for long time. For switching at t=0, find i(t) for t>0. 7 Marks

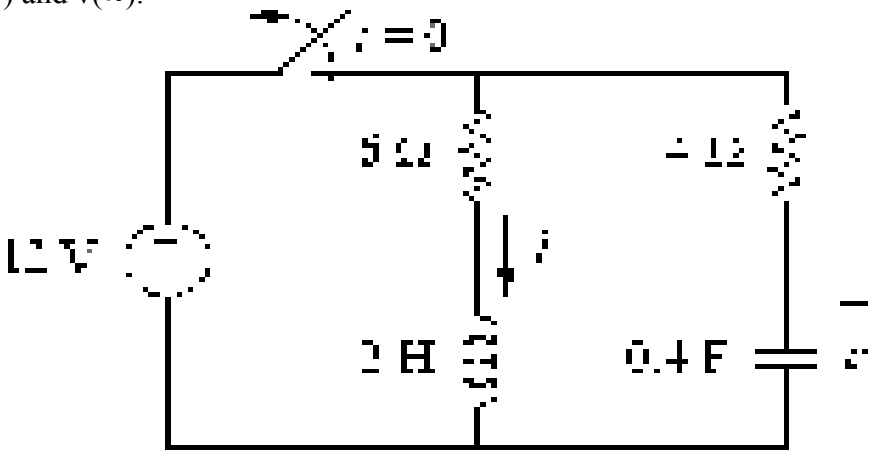


(OR)

10 a) In the circuit of figure, the switch has been in position 'a' for long time but moves instantaneously to position 'b' at t=0. Determine $i_0(t)$. 7 Marks



b) For the circuit in figure, find: (i) $i(0^+)$ and $v(0^+)$, (ii) $di(0^+)/dt$ and $dv(0^+)/dt$ and (iii) $i(\infty)$ and $v(\infty)$. 7 Marks



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CODE No.: 16BT10501 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech I Semester (SVEC-16) Supplementary Examinations May - 2019

PROGRAMMING IN C

[Civil Engineering, Electrical and Electronics Engineering, Mechanical Engineering, Electronics and Communication Engineering, Computer Science and Engineering, Electronics and Instrumentation Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) What are the keywords in C? What restrictions apply to their use? 8 Marks

b) Explain the purpose of each of the following expressions. 6 Marks

i) a – b ii) a * (b + c)
iii) d = a * (b + c) iv) a >= b
v) (a % 5) == 0 vi) a < (b / c)

(OR)

2 a) Name and describe the four data-type qualifiers. To which data types can each qualifier be applied? 7 Marks

b) Suppose x, y and z are floating-point variables that have been assigned the values x = 8.8, y = 3.5 and z = -5.2. Determine the value of each of the following arithmetic expressions. 7 Marks

i) x + y + z. ii) x % y. iii) 2 * y + 3 * (x - z).

UNIT-II

3 a) Summarize the use of gets() and puts() functions to transfer strings between the computer and the standard input and output devices. Compare the use of these functions with the string transfer features in the scanf() and printf() statements. 7 Marks

b) What is the output when the following code is executed? 7 Marks

```
char str[][10]={“BLUE”, “RED”, “ORANGE”, “GREEN”, “YELLOW”};
puts(str[2]).
```

(OR)

4 a) How are uppercase conversion characters interpreted differently than the corresponding lowercase conversion characters in a printf() function? To what types of conversion does this feature apply? Do all versions of C recognize this distinction? 7 Marks

b) Write a program to perform arithmetic operations (Addition, Subtraction, Multiplication, Division and Modulo Division) using Switch statement. 7 Marks

UNIT-III

5 a) Define a structure POINT where members are the coordinates of a point in a plane. Write a function that receive the coordinates of two points from the calling function and return the distance between them. Write another function that return the coordinates of the midpoint. Write the function main which accepts the coordinates of two points from keyword and option to perform the specified operation by calling one of the two functions. 7 Marks

b) Write a program to swap two integer variables by passing pointers to a function and also explain the concept of Call-by-value. 7 Marks

(OR)

6	a)	Explain the syntax of Pointer variable declaration. Explain the significance of Special Operators: & and * in the Pointers and Illustrate with an example program.	7 Marks
	b)	Write a program to merge two sorted arrays.	7 Marks

UNIT-IV

7	a)	Write a program to arrange list of strings in sorted order by using pointers.	7 Marks
	b)	Develop a program to delete a given string from the given list of N strings and then print the remaining strings.	7 Marks

(OR)

8		Demonstrate the concept of Pointers and functions with example programs.	14 Marks

UNIT-V

9	a)	What is the difference between sequential access and Random access of files?	7 Marks
	b)	Using Command line arguments, write a program to copy two files.	7 Marks

(OR)

10	a)	Summarize the rules that apply to processing unions. Compare with the rules that apply to processing structures.	7 Marks
	b)	Define a structure COMPLEX whose fields are the real and imaginary parts of a complex numbers. Write a function that returns the quotient of two parameters. Call this function in main to divide one complex number by another complex number. You must handle the case when the denominator is zero.	7 Marks

CODE No.: 16BT1BS01 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

ENGINEERING CHEMISTRY

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain estimation of water Hardness by EDTA METHOD.	7 Marks
	b)	Discuss advanced purification methods developed for obtaining reliable drinking water from challenging water sources.	7 Marks
		(OR)	
2	a)	Give the specifications of "Water for Steam Generation". Explain Caustic embrittlement, Priming and Foaming.	7 Marks
	b)	What is desalination? Describe various methods available for desalination and compare them critically.	7 Marks

UNIT-II

3	a)	What is self lubricating plastic? Give examples. Name some specific applications and it's synthesis.	7 Marks
	b)	Discuss the role of polymers as water softeners taking demineralization process example.	7 Marks
		(OR)	
4	a)	Discuss the preparation, properties and uses of PTFE and PMMA Resin.	7 Marks
	b)	Explain engineering applications of Composites.	7 Marks

UNIT-III

5	a)	Discuss the twelve principles of Green Chemistry.	7 Marks
	b)	Explain with examples the bottom-up and top-down techniques. Present merits and demerits.	7 Marks
		(OR)	
6	a)	"Green Chemistry is also called benign chemistry or sustainable chemistry". Comment	6 Marks
	b)	Explain wet chemical synthesis of Nanomaterials and their applications.	8 Marks

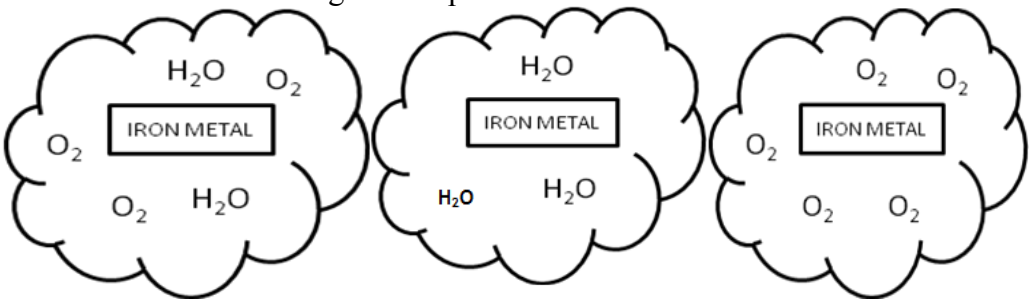
UNIT-IV

7	a)	Briefly outline the types of battery, chemistry involved and their role in our day to day life.	7 Marks
	b)	Explain the construction and working of potentiometric sensor.	7 Marks
		(OR)	
8	a)	Differentiate dry cell, storage cell and fuel cell with suitable examples.	10 Marks
	b)	Although hydrogen gas can be produced by the electrolysis of water, this reaction is usually not carried out on a large scale. Suggest a reason for this fact.	4 Marks

UNIT-V

9	a)	Explain what type of corrosion occurs when; i) Screw and washer are made of different metals. ii) Presence of NaOH in mild steel boiler under stress.	10 Marks
	b)	Write a short note on Lubrication.	4 Marks
		(OR)	

10 a) Identify and explain in detail MECHANISM of the possible type of corrosion that Iron metal will undergo in the pictured environment. 9 Marks



Assume that only the given MOLECULES exist in the environment.

b) You are working on the design of a battery and need to have a small button plated with silver (because it has useful conductive properties and is corrosion resistant). You determine that a coating of 1mm will suffice for the design. What would you have to look up to devise an initial cost estimate for this process? 5 Marks

CODE No.: 16BT1BS02 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May – 2019

ENGINEERING PHYSICS

[Civil Engineering, Mechanical Engineering, Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit.
All questions carry equal marks.

UNIT-I

1	a)	What is pumping mechanism? Explain the different methods of pumping mechanism in lasers.	8 Marks
	b)	How a laser is light different from a normal light?	2 Marks
	c)	Explain total internal reflection in optical fibers.	4 Marks
		(OR)	
2	a)	Explain the principle of an optical fiber.	2 Marks
	b)	Write about Acceptance angle and Numerical aperture. Derive the expressions for Acceptance angle and Numerical aperture.	12 Marks

UNIT-II

3	a)	What is wave function? Write its physical significance.	4 Marks
	b)	Discuss the quantum mechanical treatment of a particle in a one-dimensional box.	10 Marks
		(OR)	
4	a)	Write the basic postulates of quantum mechanics.	4 Marks
	b)	Explain the concept of wave-particle duality and obtain an expression for wavelength of matter waves.	10 Marks

UNIT-III

5	a)	Write a note on direct and indirect band gap semiconductors.	6 Marks
	b)	Explain Hall effect with a neat diagram? Derive Hall voltage, Hall Coefficient and give the applications of Hall effect.	8 Marks
		(OR)	
6	a)	Define a dielectric material. All insulators are not dielectrics but all dielectrics are insulators. Justify the statement with suitable example.	4 Marks
	b)	Define dielectric constant and dipole moment.	4 Marks
	c)	Explain how dielectric materials improve the charge storing capacity of a parallel plate capacitor.	6 Marks

UNIT-IV

7	a)	Explain the tern critical magnetic field in a superconductor. How does the critical magnetic field vary with temperature in Type-I and Type-II superconductors?	10 Marks
	b)	Explain tunneling in superconductors.	4 Marks
		(OR)	
8	a)	Discuss Low-Temperature, High-Temperature and 1, 2, 3-superconductors.	6 Marks
	b)	Describe any two applications of superconductors in detail.	8 Marks

UNIT-V

9 a) Why X-rays gets diffracted by crystals? Derive Bragg's law of X-ray diffraction by crystals. 8 Marks

b) A beam of X-rays is incident on a sodium chloride crystal (lattice spacing 2.82×10^{-20}m). The first order Bragg reflection is observed at a glancing angle of 8° 35'. What is the wavelength of X-rays? At what angle would be the second and third order Bragg reflections occur? 6 Marks

(OR)

10 a) What are Nano materials? List various types of nano materials. 6 Marks

b) Mention and discuss the important properties of nanoparticles that make them different from bulk materials. 8 Marks

CODE No.: 16BT1HS01 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

TECHNICAL ENGLISH

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Differentiate between: 7 Marks
   i) Verbal and non-verbal communication.
   ii) Oral and written communication.

   b) Illustrate with examples 7 Marks
   i) Interpersonal communication.
   ii) Intra Personal communication.
   iii) Mass communication.
   iv) One -to-group communication.

(OR)

2 a) What is the importance of acquiring LSRW skills in technical education? 7 Marks

   b) How can the speaking skills be developed from reading, writing and listening skills? 7 Marks

UNIT-II

3 a) What are the traits of a good listener? Illustrate with suitable examples. 7 Marks

   b) "Advising, analyzing, educating and comparing are the empathy blockers". Explain with suitable examples. 7 Marks

(OR)

4 a) Write about the qualities of good listener. 7 Marks
   i) Being Non-evaluative. ii) Paraphrasing.
   iii) Reflecting Hidden Feelings.

   b) Write about Appreciative listening, Empathetic listening, Comprehensive listening and Critical listening with suitable examples. 7 Marks

UNIT-III

5 a) What are the various ways of acquiring fluency of speaking English language? How can a person obtain Confidence and Clarity? 7 Marks

   b) Telephone Conversation. Fill in the gaps with the words and phrases below to complete the summary of the conversation. 7 Marks

   Ms Anderson telephones Diamonds Galore to _____ with Mr. Franks. Mr. Franks is not in the office, but Henry Smith, the secretary, speaks to Ms Anderson about a _____ problem with some earrings. The earrings have not yet _____ at Diamonds Galore. Ms Anderson tells Peter that there was a problem with the _____ from France, but that the earrings should arrive tomorrow morning.

   Next, they _____ a meeting between Ms Anderson and Mr. Franks. Mr. Franks is not able to _____ with Ms Anderson on Thursday because he is _____. They finally decide on Friday morning at 10 o'clock after a _____ that Mr Owen usually holds on Friday mornings.

   speak, delivery / shipment, arrived, shipment / delivery, schedule, meet, busy, staff meeting.

(OR)

6 a) Define the terms with suitable examples. 7 Marks

i) Kinesics. ii) Proxemics. iii) Haptics.
iv) Chronemics. v) Facial expressions. vi) Eye contact.
vii) Self image.

b) **Define cross cultural communication and discuss the following with regard to it.** 7 Marks

i) business opportunities. ii) job opportunities.
iii) sharing of views and ideas. iv) talent improvisation.
v) understanding the diverse markets. vi) educational opportunities.
vii) improving human relationships.

UNIT-IV

7 Evaluate guidelines of the reading rates and highlight their importance in various reading materials. 14 Marks

(OR)

8 Differentiate between deductive and inductive logic by explaining the role of topic and supporting sentences in a paragraph. 14 Marks

UNIT-V

9 a) Complete the given sentences with the suitable words given 7 Marks

i) The ----------if not contempt, which many of us have for religious other than our own, is due to ignorance and incomprehension.
a) anger b) opposition c) indifference d) indignation

ii) When the bus was at full speed, its brakes failed and an accident was ---------.
a) inevitable b) infallible c) essential d) undeniable

iii) To explain his designs to his visitor, the architect ---------- a plan.
a) made b) sketched c) built d) constructed

iv) Though Bonsai, a well-known art form, which originated in China, it was ----------by the Japanese.
a) borrowed b) finished c) perfected d) cultivated

v) Un happy about the treatment meted out to her, Shanti ----------demanded justice.
a) sumptuously b) voraciously c) spasmodically d) vociferously

b) Complete the given sentences with the suitable words given 7 Marks

i) The German force lost no time in retreat lest they ---------- be cut off and surrounded.
a) would b) should c) could d) might

ii) Older people usually fear novelty as they subconsciously realize that any ---------is a threat to their established way of life.
a) action b) adventure c) change d) movement

iii) Hindus believe that ---------- from the cycle of birth and re birth can be attained only by good deeds.
a) delivery b) bondage c) retirement d) deliverance

iv) Would you mind -------- to the Principal how the trouble started?
a) remarking b) telling c) talking d) explaining

v) The statue was so ----------that people stared at it in horror.
a) grotesque b) exquisite c) beatific d) cumbersome

(OR)

10 Interpret the usage of the right words in the right context as one of the essential elements of effective writing. 14 Marks

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I B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

TRANSFORMATION TECHNIQUES AND PARTIAL DIFFERENTIAL EQUATIONS

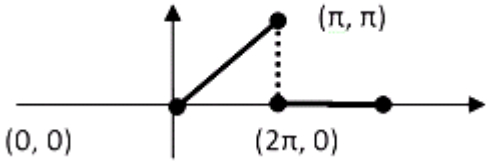
[Civil Engineering, Electrical and Electronics Engineering, Mechanical Engineering, Electronics and Communication Engineering, Computer Science and Engineering, Electronics and Instrumentation Engineering, Information Technology and Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit.
All questions carry equal marks.

UNIT-I

1 Construct the periodic function for the graph in the interval $(0, 2\pi)$, and then express it as a Fourier series. 14 Marks



(OR)

2 Develop Fourier series expansion for the function $f(x) = \begin{cases} \pi x, & 0 < x < 1 \\ \pi(2 - x), & 1 < x < 2 \end{cases}$ 14 Marks

and hence evaluate $\frac{1}{1^2} + \frac{1}{3^2} + \frac{1}{5^2} - - - -$.

UNIT-II

3 Using Fourier cosine transform of e^{-ax}, find the Fourier sine transform of xe^{-ax}. 14 Marks

(OR)

4 Solve the integral equation $\int_0^\infty f(x)\cos px\,dx = \begin{cases} 1 - p; & 0 \le p \le 1 \\ 0; & p > 1 \end{cases}$ and hence 14 Marks

evaluate $\int_0^\infty \frac{\sin^2 t}{t^2} dt$.

UNIT-III

5 Solve, by using Laplace transforms method, $y'' + 4y = e^{-t}$, $y(0) = 2$, $y'(0) = 1$. 14 Marks

(OR)

6 Find the general solution to $y'' + 9y = \cos 2t$ by Laplace transform method. 14 Marks

UNIT-IV

7 i) Evaluate $Z(\sin h\, n\theta)$ 14 Marks
ii) Determine Z-transform of unit step sequence.

(OR)

8 Find the response of the system $y_{n+2} - 5y_{n+1} + 6y_n = u_n$, $y_0 = 0$, $y_1 = 1$ and $u_n = 1$ for $n = 0, 1, 2 \ldots$ by z-transform. 14 Marks

UNIT-V

9 Solve the differential equation $\frac{\partial^2 z}{\partial x \partial y} = \sin x \sin y$ for which $\frac{\partial z}{\partial y} = -2\sin y$, when x=0 and z=0, when y is an odd multiple of π/2. 14 Marks

(OR)

10 A homogeneous rod of conducting material of length 100cm as its ends kept at zero temperature and the temperature initially is 14 Marks

$$u(x,0) = \begin{cases} x & 0 \le x \le 50 \\ 100 - x & 50 \le x \le 100 \end{cases}.$$

Find the temperature u(x, t) at any time t.

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CODE No.: 16BT20101 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

BUILDING MATERIALS AND CONSTRUCTION TECHNOLOGY

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit.
All questions carry equal marks.

UNIT-I

1		Discuss about the classification of bricks in all aspects.	14 Marks
		(OR)	
2	a)	Explain about the ingredients of good brick earth.	7 Marks
	b)	Discuss about the qualities of a good brick.	7 Marks

UNIT-II

3		Explain about the manufacturing process of cement.	14 Marks
		(OR)	
4	a)	Explain about the composition of cement clinker.	7 Marks
	b)	Explain about hydration of cement.	7 Marks

UNIT-III

5	a)	Write short notes about properties and uses of copper.	7 Marks
	b)	Discuss about the alloys of copper.	7 Marks
		(OR)	
6	a)	Explain about the constituents of glass.	7 Marks
	b)	Write short notes about commercial forms of glass.	7 Marks

UNIT-IV

7		Explain about the English and Flemish bond with the help of neat sketches.	14 Marks
		(OR)	
8		Explain about the types of cavity and partition walls.	14 Marks

UNIT-V

9	a)	Write about the characteristics of fire resisting materials.	7 Marks
	b)	Explain about the fire resisting properties of building materials.	7 Marks
		(OR)	
10	a)	Write short notes on objects of plastering and requirements of good plaster.	7 Marks
	b)	Discuss about the types of mortars for plastering.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

ENGINEERING MECHANICS

[Civil Engineering, Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

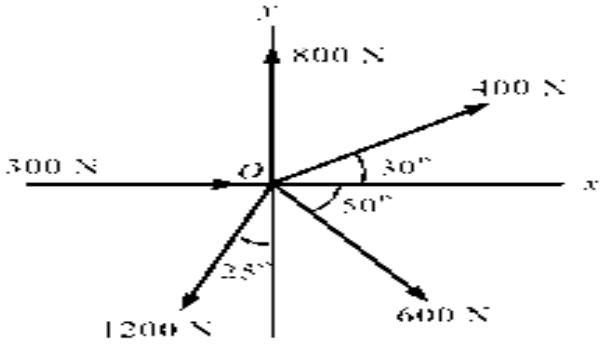
Answer One Question from each Unit.
All questions carry equal marks.

UNIT-I

1 a) State the Polygon law of forces with a neat sketch. 3 Marks

b) What are the various characteristics of a force? 4 Marks

c) Determine magnitude and direction of the resultant of the five coplanar concurrent forces acting at point 'O' as shown in figure. 7 Marks



(OR)

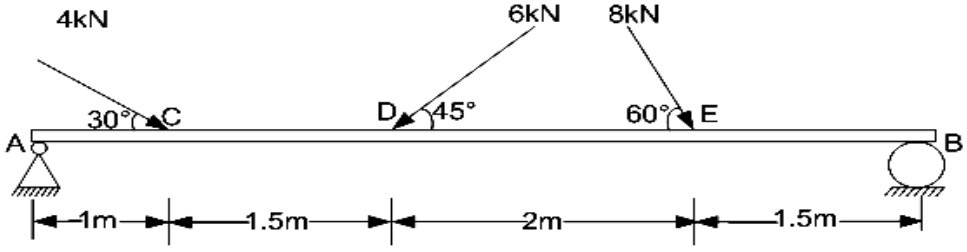
2 a) Explain how the Parallelogram law can be used to obtain the resultant of more than two concurrent forces. 7 Marks

b) What is a resultant force? What is meant by composition of forces, component of a force and resolution of a force? Can a force be resolved into non-perpendicular components? If so, how? 7 Marks

UNIT-II

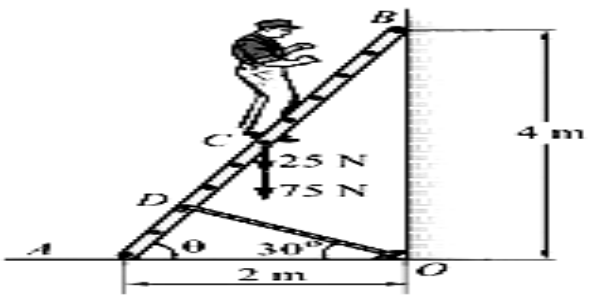
3 a) State and prove Varignon's principle. 7 Marks

b) A beam AB of span 6m is hinged at A and supported on rollers at end B and carries load as shown in figure. Determine the reactions at A and B. 7 Marks



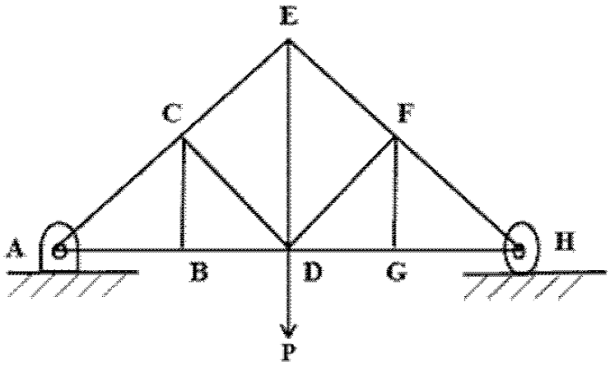
(OR)

4 a) A man of weighing 75N stands on the middle rung of a 25N ladder resting on a smooth floor and against a wall as shown in fig. The ladder is prevented from slipping by a string OD. Find the tension in the string and reactions at A and B. 7 Marks



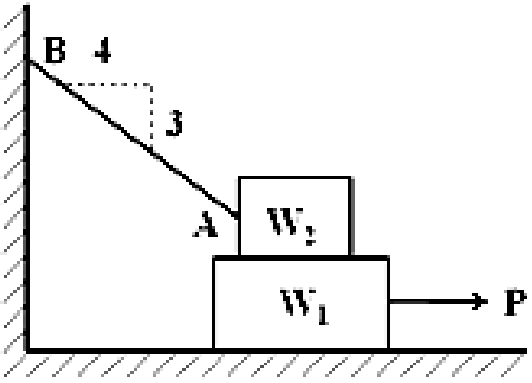
b) State relevance of Maxwell's equation with different types of trusses with suitable sketches. 3 Marks

c) Prove that a tensile force equal to the applied load P is produced in the bar DE of the truss shown in the figure. 4 Marks

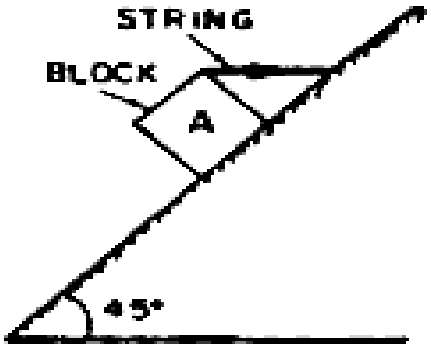


UNIT-III

5 a) A block of weight W_1=890 N rests on a horizontal surface and supports on top of another block of weight W_2=222.5 N. The block W_2 is attached to a vertical wall by the inclined string AB. Find the magnitude of the horizontal force P, applied to the lower block as shown in the figure that will be necessary to cause slipping to impend. The coefficient of static friction for all contiguous surfaces is μ=0.3. 7 Marks



b) Block A weighing 15N is a rectangular prism resting on a rough inclined plane as shown in figure. The block is tied up by a horizontal string which has a tension of 5N. Find: (i) the frictional force on the block, (ii) the normal reaction of the inclined plane, (iii) the coefficient of friction between the surfaces of contact. 7 Marks



(OR)

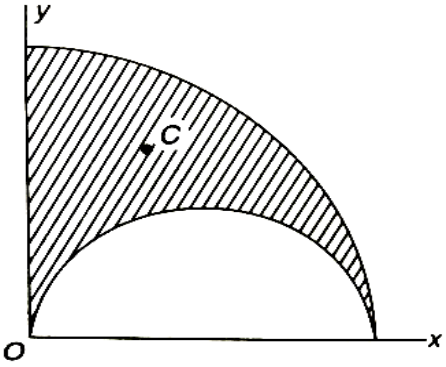
6 a) What is friction? Explain how friction is both desirable and undesirable in engineering applications also state the laws of static and dynamic friction. 7 Marks

b) A body of weight 50N is placed on a rough horizontal plane. To just move the body on the horizontal plane, a push of 15N inclined at 30° to the horizontal plane is required. Find the coefficient of friction. 7 Marks

UNIT-IV

7 a) State and explain perpendicular axis theorem with a neat sketch. 3 Marks

b) Locate the centroid C of the shaded area obtained by cutting a semicircle of diameter 'a' from the quadrant of a circle of radius a as shown in the figure. 7 Marks



c) Determine the moment of inertia of a homogeneous regular hexagonal lamina having mass **m** and sides of length **a**, with respect to a diagonal. 4 Marks

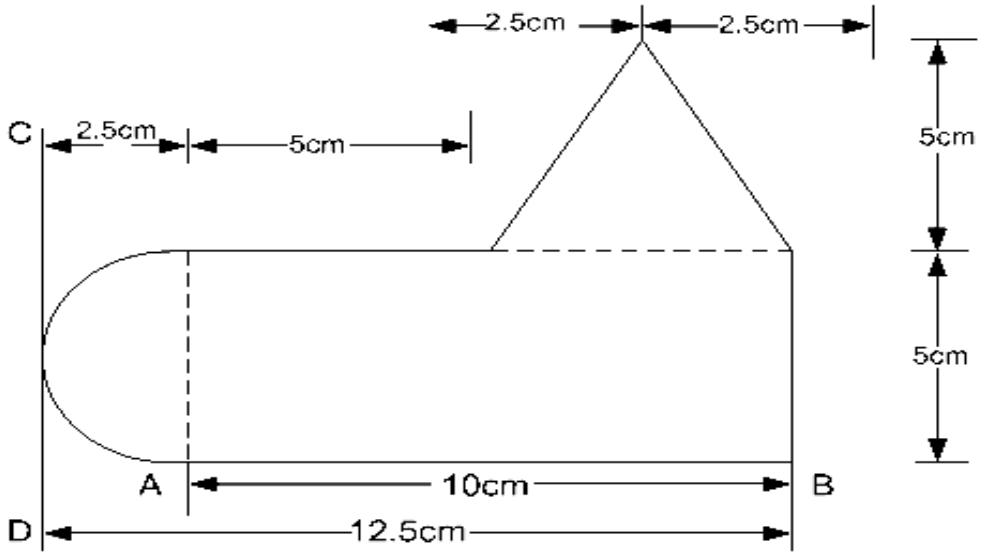
(OR)

8 a) Discuss the following terms with suitable examples: 7 Marks

i) Centroid. ii) Centre of mass.

iii) Centre of gravity. iv) Radius of gyration.

b) Determine the centre of gravity of the plane uniform lamina shown in figure. 7 Marks



UNIT-V

9 a) A train is uniformly accelerated and passes successive kilometer stones with velocities of 18 km/hr and 36 km/hr respectively. Calculate the velocity when it passes the third kilometer stone. Also find the time taken for each of the two intervals of one kilometer. 7 Marks

b) A ball projected vertically upwards attains a maximum height of 400 meters. Calculate the velocity of projection and compute the time of flight in air. At what altitude will this ball meet a second ball projected vertically upwards 4 seconds later with a speed of 120 meters per second? 7 Marks

(OR)

10 a) A golfer hits a 46gm ball with an initial velocity of 48 m/s at angle of 24^0 with the horizontal. Determine: 7 Marks

i) Initial KE of the ball.

ii) KE of the ball when it reaches its maximum height.

b) State and prove the principle of conservation of momentum. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

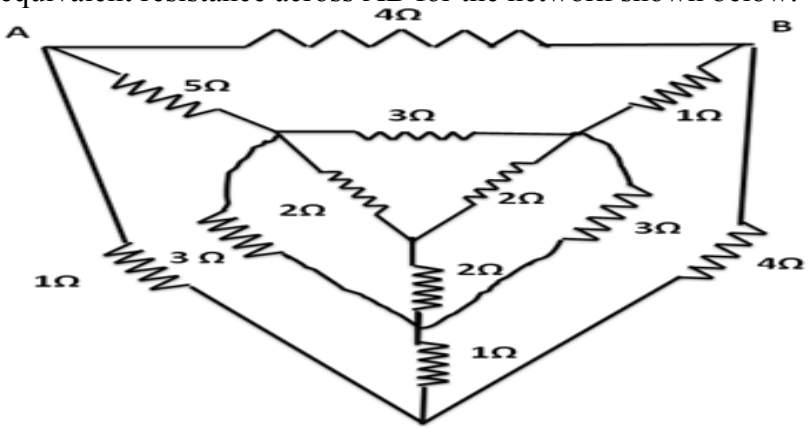
[Civil Engineering, Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

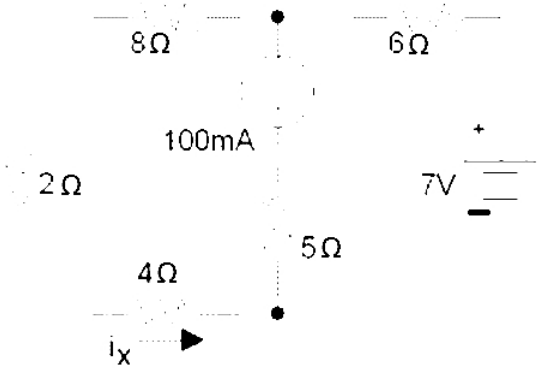
Answer One Question from each Unit.
All questions carry equal marks.

UNIT-I

1 a) Find the equivalent resistance across AB for the network shown below. 7 Marks

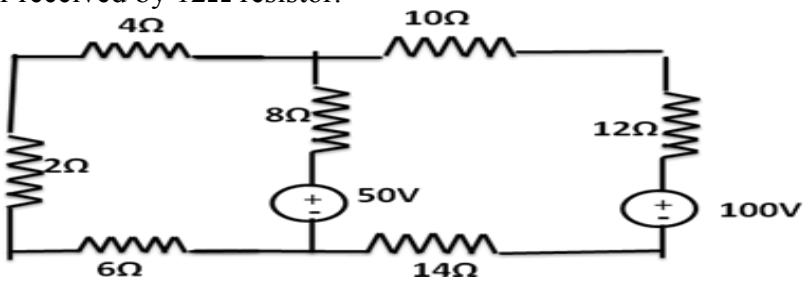


b) Solve for the current i_x flowing right through the 4Ω resistor using Mesh-Current analysis. 7 Marks

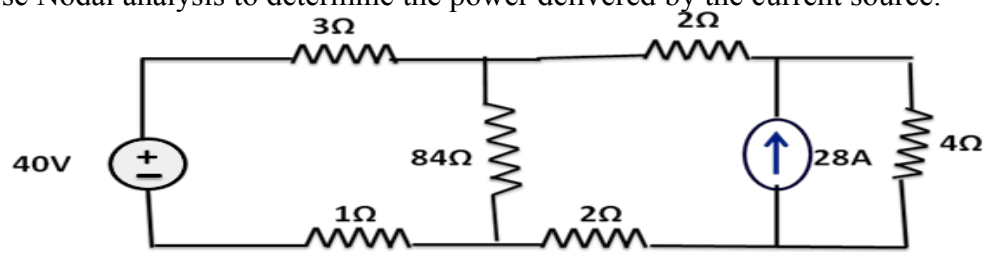


(OR)

2 a) Using Mesh analysis determine the current through 8Ω resistor. Also determine the power received by 12Ω resistor. 7 Marks

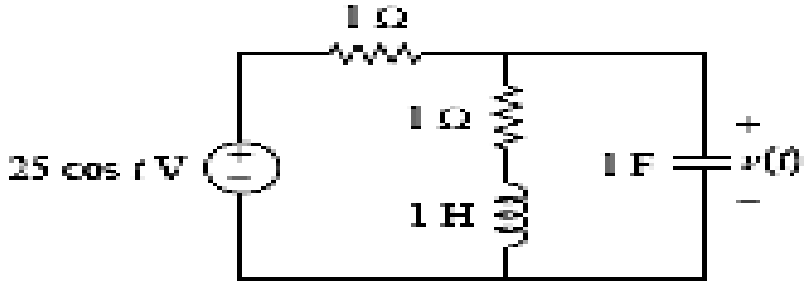


b) Use Nodal analysis to determine the power delivered by the current source. 7 Marks

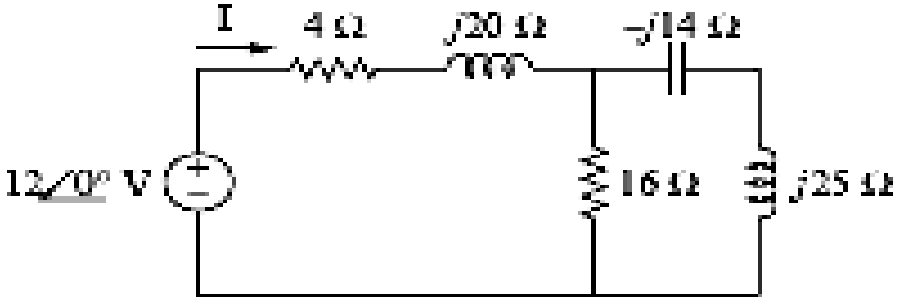


UNIT-II

3 a) Compute the V(t), shown in figure. Also compute the power delivered by voltage source. 7 Marks

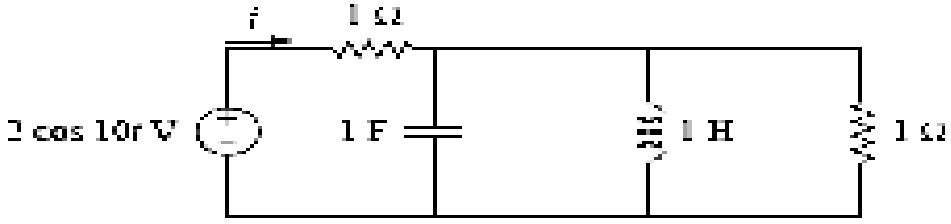


b) Compute the circuit impedance and current in all the elements of circuit shown in figure. 7 Marks

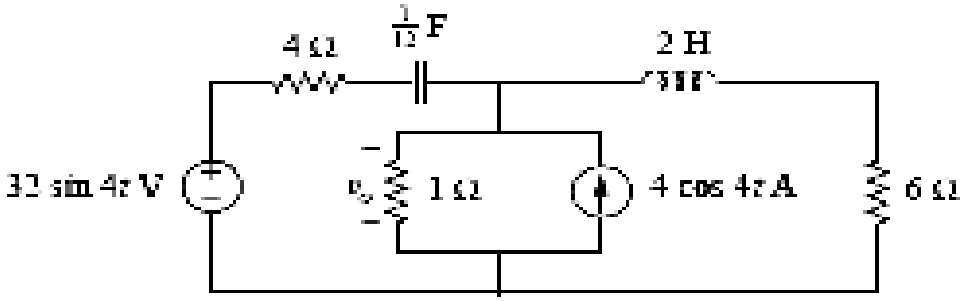


(OR)

4 a) Compute the current i. Also compute the current in capacitor and inductor. 7 Marks



b) Compute the voltage "V_0". And also find current passing through 6Ω resistor. 7 Marks



UNIT-III

5 a) A 6 – pole lap – connected 250V Shunt motor has 396 armature conductors. It takes 30A on full load. The flux per pole is 0.04 webers. The armature and shunt field resistance are 0.1Ω and 200Ω respectively. Determine the speed on full load. 7 Marks

b) Draw well labeled connection diagrams to show a separately excited, shunt, series and compound generators. 7 Marks

(OR)

6 a) State and explain the construction features of three phase induction motor. 7 Marks

b) A 10 pole DC generator has per pole flux of 48 mWb and winding is connected in lap with 960 conductors. Calculate the generated EMF on open circuit when it runs at 400 r.p.m. If the armature is wave wound at what speed must the machine be driven to generate the same voltage. 7 Marks

UNIT-IV

7 a) Classify the transducers with examples. 7 Marks

b) State and explain the principle operation of piezoelectric transducer with neat sketch, list the applications of it. 7 Marks

(OR)

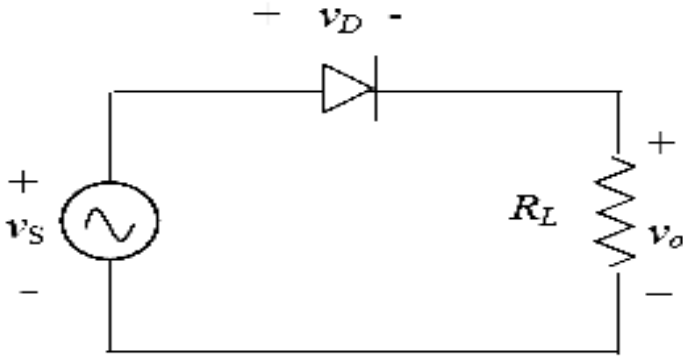
8 a) State the need for digital meters, list out the advantages of digital meters compare to analog meters. 7 Marks

b) State and explain the principle operation of Hall Effect transducer and give applications for it. 7 Marks

UNIT-V

9 a) Explain the operation of full wave rectifier with center tap transformer with appropriate waveforms. 7 Marks

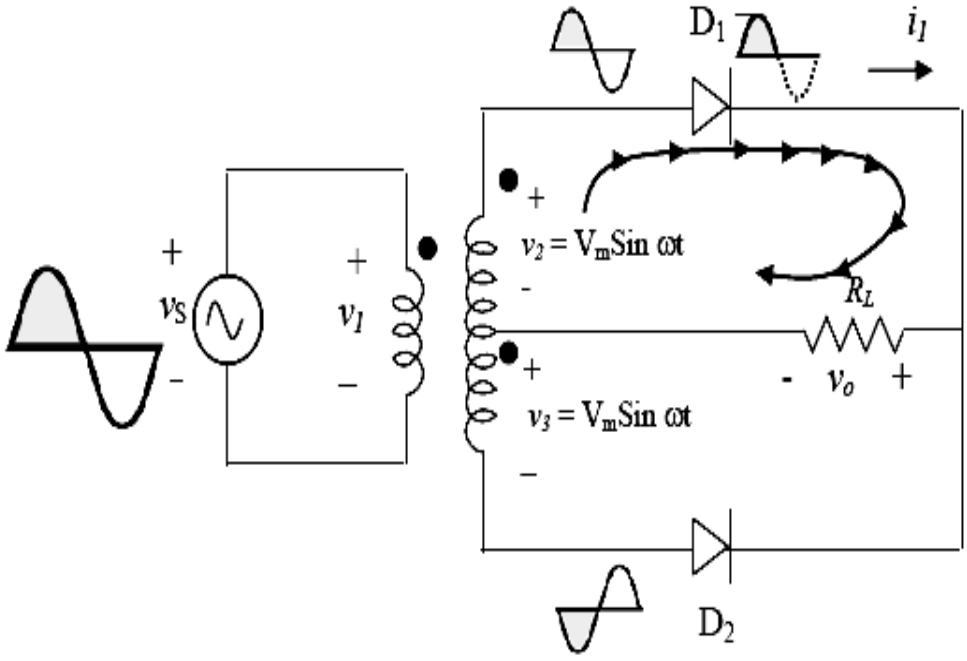
b) A 50Ω load resistance is connected across a half wave rectifier. The input supply voltage is 230V (rms) at 50Hz. Determine the DC output (average) voltage, peak-to-peak ripple in the output voltage (Vp-p) and the output ripple frequency (fr). 7 Marks



(OR)

10 a) Explain the operation full wave bridge rectifier with wave forms of voltage across load and diodes. 7 Marks

b) In the full-wave rectifier circuit of figure shown below, the transformer has a turns ratio of 1:2. The transformer primary winding is connected across an AC source of 230V (rms), 50Hz. The load resistor is 80Ω. For this circuit, determine the DC output voltage, peak-to-peak ripple in the output voltage and output ripple frequency. 7 Marks



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

ENGINEERING MATERIALS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit.
All questions carry equal marks.

UNIT-I

1	a)	Define the following properties with examples: i) Specific heat. ii) Thermal conductivity. iii) Melting point. iv) Density.	10 Marks
	b)	Differentiate between soft magnetic material and hard magnetic material.	4 Marks
		(OR)	
2	a)	What are the electrical properties of material? Explain them briefly.	7 Marks
	b)	What is a composite material? List various applications of composites.	7 Marks

UNIT-II

3	a)	Write a note on surface defects and give their classification.	6 Marks
	b)	Explain the reasons to study the crystal structure of metals.	4 Marks
	c)	Differentiate between primary and secondary bonding in materials.	4 Marks
		(OR)	
4	a)	Explain Heyn's intercept method for determination of grain size.	6 Marks
	b)	Calculate the atomic packing factor for FCC and SC.	8 Marks

UNIT-III

5	a)	Discuss properties, microstructure and applications of Nodular cast iron.	7 Marks
	b)	Explain each type of steel with chemical composition, microstructure, properties and application: i) Mild steel. ii) HSS. iii) Austenitic steel.	7 Marks
		(OR)	
6	a)	Discuss the properties and applications of pure Tin.	5 Marks
	b)	Which stainless steel is best suited for surgical instruments? Explain.	5 Marks
	c)	Classify steels based on applications.	4 Marks

UNIT-IV

7	a)	What are cermets? Explain any two of them in detail.	7 Marks
	b)	Classify the composites materials and explain advantages and limitations of composites materials.	7 Marks
		(OR)	
8	a)	What is a matrix? What are the various types of matrices used in the composition materials? Explain the advantages and disadvantages and also explain applications.	7 Marks
	b)	Write short notes on ceramics for wear application.	7 Marks

UNIT-V

9	a)	Explain any one non destructive testing method in-detail which works on the Sound reflection principle. Also mention the various steps involved in this method in detail. What are the merits and demerits of this method?	10 Marks
	b)	State the differences between X-ray and Gamma-ray Radiography.	4 Marks
		(OR)	
10	a)	Explain any one non destructive testing method in-detail which works with the X-rays. Also mention the various steps involved in this method in detail. What are the merits and demerits of this method?	8 Marks
	b)	State the limitations of the following methods of inspection: i) Visual test. ii) Magnaflux test.	6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

ELECTRONIC DEVICES AND CIRCUITS

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit.
All questions carry equal marks.

UNIT-I

1 a) Derive an expression for the ripple factor of a full wave rectifier using inductor filter. 6 Marks

b) A full-wave rectifier is driven from a 20-0-20V_{rms} 50Hz transformer. The load resistance is 10Ω. 8 Marks

i) Find dc voltage, dc current and ripple factor.

ii) Find dc voltage, dc current and ripple factor if a 10,000μf capacitor is shunted across the load.

(OR)

2 a) Calculate the value of capacitance to use in a capacitor filter connected to a full wave rectifier operating at a frequency of 50Hz if the ripple factor is 10% for a load of 1KΩ. 5 Marks

b) Derive the expression for ripple factor in a full wave rectifier with capacitor filter. 9 Marks

UNIT-II

3 a) What is the need for biasing a transistor? 7 Marks

b) Draw a fixed bias circuit and derive the expression for the stability factor. 7 Marks

(OR)

4 a) Draw the circuit of self bias circuit and derive the expression for stability factor. 6 Marks

b) In a CE germanium transistor amplifier using self bias circuit, $R_C = 2.1K\Omega$, $\beta = 50$, $V_{CC} = 9V$ and the operating point is required to be set at $I_C = 3mA$ and $V_{CE} = 3V$. Determine the values of R_1, R_2 and R_E. 8 Marks

UNIT-III

5 a) Derive the equations for voltage gain, current gain, input impedance and output impedance for CE amplifier using the h-parameter model. 9 Marks

b) State Miller's theorem with the aid of a circuit diagram. 5 Marks

(OR)

6 a) What are the salient features of hybrid parameters and define them? 5 Marks

b) A CB amplifier is driven by a voltage source of internal resistance $R_s = 600\Omega$ and the load impedance of $R_L = 1200\Omega$. The h–parameters are $h_{ib} = 22\ \Omega$, $h_{rb} = 4 \times 10^{-4}$, $h_{fb} = -0.98$ and $h_{ob} = 0.25\mu A/v$. Compute the current gain, input resistance, voltage gain and output resistance 9 Marks

UNIT-IV

7 a) Draw the drain characteristics of JFET and indicate all the regions of operation. 7 Marks

b) Sketch the circuit of a CS amplifier. Derive the expression for voltage gain at low frequencies. 7 Marks

(OR)

8 a) Explain the construction of depletion mode MOSFET or IGFET with neat diagrams and also draw the symbols. 8 Marks

b) Give the complete low-frequency analysis of common source FET amplifier. 6 Marks

UNIT-V

9	Give the construction details of UJT and explain its operation with the help of equivalent circuits.	14 Marks

(OR)

10	Explain varactor diode with the help of its circuit diagram and characteristics. Describe the working principle of an SCR with V–I characteristics.	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

BASIC ELECTRONIC DEVICES AND CIRCUITS

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit.
All questions carry equal marks.

UNIT-I

1 Describe the following terms for Centre Tapped Full wave rectifier. 14 Marks
i) DC Ammeter. ii) DC Voltmeter.
iii) Wattmeter. iv) Regulation.

(OR)

2 a) Determine the dynamic forward and reverse resistance of p-n junction silicon diode when the applied voltage is 0.25V at T = 3000K with given $I_0 = 2\mu A$. 7 Marks

b) Explain the concept of diode capacitance. Derive expression for transition capacitance. 7 Marks

UNIT-II

3 a) Draw the transistor biasing circuit using fixed bias arrangement and explain its principle with suitable analysis. 10 Marks

b) Define alpha and beta of a transistor and derive the relationship between them. 4 Marks

(OR)

4 a) Explain the difference between ac and dc load lines. Derive the load line equation of a BJT in CE configuration. 8 Marks

b) What is early effect? Explain how it affects the BJT characteristics in CB configuration. 6 Marks

UNIT-III

5 a) Draw the transfer characteristics of an Depletion MOSFET of : 10 Marks
i) N Channel Type. ii) P Channel Type.

b) Compare the JFET and BJT. 4 Marks

(OR)

6 a) Explain a FET amplifier in the common source configuration with a neat circuit diagram. 10 Marks

b) Compare the JFET and MOSFET. 4 Marks

UNIT-IV

7 a) Draw the circuit of Crystal oscillator and explain its working. Derive the expression for frequency of oscillation. 10 Marks

b) Why do we need three RC networks for a phase shift oscillator? Can it be two or four? 4 Marks

(OR)

8 a) Draw the circuit diagram of General oscillator and obtain the maintenance condition and the frequency of oscillations. 10 Marks

b) Discuss the frequency range of RC and LC oscillators. 4 Marks

UNIT-V

9 Sketch and explain the 6 energy band diagrams of Tunnel diode. 14 Marks

(OR)

10 Explain the characteristics of UJT. Indicate the negative resistance region. 14 Marks

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CODE No.: 16BT20541 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

FOUNDATIONS OF DATA STRUCTURES

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit.
All questions carry equal marks.

UNIT-I

1 Insertion Sort procedure uses a linear search to scan (backward) through the sorted sub array A [0 ... p - 1]. We can use a binary search instead to improve the overall worst-case running time of insertion sort to Θ(n log n). Write routines to implement it. 14 Marks

(OR)

2 a) An array contains the elements shown below. The first two elements have been sorted using a straight insertion sort. What would be the value of the elements in the array after three more passes of the straight insertion sort algorithm <3, 13, 7, 26, 44, 23, 98, 57>? 7 Marks

b) Insertion sort can be expressed as a recursive procedure as follows. In order to sort $A[1 \cdot\cdot n]$, we recursively sort $A[1 \cdot\cdot n-1]$ and then insert $A[n]$ into the sorted array $A[1 \cdot\cdot n - 1]$. Write a recurrence for the running time of this recursive version of insertion sort. 7 Marks

UNIT-II

3 a) What do you understand by stack overflow and underflow? 7 Marks

b) Write an algorithm for parenthesis matching using stacks. 7 Marks

(OR)

4 a) Show how to evaluate the expression in the postfix using stack 7 Marks

b) Write a program in C to check the balance of symbols and trace the program for the following code, using a stack: 7 Marks

```
void main( )
{   int a=10, b=20, c;
    c = (a+(a+b);
 }
```

UNIT-III

5 a) Given a single linked list L, formulate separate routine/algorithm to inserting a node after the specified node in list. What are the advantages of doubly linked list over singly linked list? 7 Marks

b) Given a single linked list L, formulate separate routine/algorithm to insert an element X after position P in list. Write an algorithm to traverse elements in a singly linked list. 7 Marks

(OR)

6 a) Differentiate singly linked list and circularly linked list. Outline an algorithm to delete an $\mathbf{i^{th}}$ node on a linked list. Be sure that such a node exists. 7 Marks

b) Write an algorithm to count the number of nodes and print out the elements in a singly linked list. 7 Marks

UNIT-IV

7	a)	Write recursive and iterative versions of the BINARY SEARCH TREE-MINIMUM and BINARY SEARCH TREE-MAXIMUM procedures.	7 Marks
	b)	What do you mean by tree traversal? Give recursive algorithms that perform pre-order and post-order tree walks in O(n) time on a tree of **n** nodes.	7 Marks

(OR)

8	a)	Write the findmin ( ) and findmax () routines for a binary search tree.	7 Marks
	b)	List all possible non-similar binary trees having four nodes.	7 Marks

UNIT-V

9		Write the initialization (), find (), insert () routines to implement Separate Chaining Hash Table by specifying their running times.	14 Marks

(OR)

10	a)	Write a program to perform a topological sort on a graph. Compare it with inefficient (Simple) topological sort. If a stack is used instead of a queue, does a different ordering result? Illustrate with an example	7 Marks
	b)	Illustrate the problem of primary clustering and secondary clustering in Open Addressing Hash Table. How do you overcome the problem?	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

OBJECT ORIENTED PROGRAMMING THROUGH C++

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit.
All questions carry equal marks.

UNIT-I

1	a)	Define Object oriented programming and Explain feature of Object oriented programming. How it is different than procedure oriented programming.	7 Marks
	b)	In what way library functions that are related to "C" and "C++" included in a C++ program? Write a small code to show the difference.	7 Marks
		(OR)	
2	a)	Describe data types in C++ in detail.	7 Marks
	b)	How will you be able to get the values of private variables of a class through its own functions'?	7 Marks

UNIT-II

3	a)	Is a function defined through default function arguments useful for Tax computation of people with different types of income slabs?	7 Marks
	b)	Explain different IF statements with examples.	7 Marks
		(OR)	
4	a)	Explain the execution that takes place when an object is passed to a function as Pointer.	7 Marks
	b)	Discuss distinct differences in detail that exists between the "C" strings and "C++" string objects.	7 Marks

UNIT-III

5		How you can pass array to a function? Write a program for bubble sort using function and array. Explain the procedure with an example.	14 Marks
		(OR)	
6	a)	Write a program to use array with enumeration type.	7 Marks
	b)	Explain multi dimensional arrays with an example.	7 Marks

UNIT-IV

7	a)	Discuss various ways using which the instance variables of a class are initialized. Explain through examples.	7 Marks
	b)	Analyze the difference that exists when pointers to an object or the reference to an object are used.	7 Marks
		(OR)	
8	a)	What are the conversion functions used and in what way are they different from operator overloaded functions? Which function will get the preference when both of the conversion and overloaded functions are used?	7 Marks
	b)	Why are classes defined? Is it a type by itself? Write some examples of the classes.	7 Marks

UNIT-V

9	a)	What is the exact difference between **ios** defined member functions and manipulator functions which are meant for I/O formatting? Explain with an example.	7 Marks
	b)	What type of variables can be inherited when inheritance access specification is "Protected"? Explain with an example.	7 Marks
		(OR)	
10	a)	Explain various kinds of implementations that one can achieve using virtual functions.	7 Marks
	b)	How can you force a derived class to override a virtual function defined in the parent class? Explain.	7 Marks

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CODE No.: 16BT21501 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May – 2019

DIGITAL LOGIC DESIGN

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit.
All questions carry equal marks.

UNIT-I

1 a) Simplify the following Boolean expressions to a minimum number of literals:

i) $xy + x(wz+wz')$. 3 Marks

ii) $xy' + y'z' + x'z')$. 3 Marks

b) Find the complement of the following expressions:

i) $(BC' + A'D)(AB' + CD')$. 4 Marks

ii) $(AB' + C)D' + E$. 4 Marks

(OR)

2 Obtain the truth table of the following functions and express each function in sum of minterms and product of maxterms.

i) $(xy + z)(y + xz)$. 7 Marks

ii) $y'z + wxy' + wxz' + w'x'z$. 7 Marks

UNIT-II

3 Simplify the following Boolean functions using K-maps.

i) $F = \Sigma(0, 1, 4, 5, 16, 17, 21, 25, 29)$. 8 Marks

ii) $F(A, B, C, D) = \Pi(1, 3, 5, 7, 13, 15)$. 6 Marks

(OR)

4 a) Find the minimized product-of-sums expression for: 8 Marks

$F(A, B, C, D) = \Sigma(5, 7, 9, 10, 11) + \Sigma(2, 13, 15)$

b) Simplify the following Boolean function using K-map. 6 Marks

$F = BD + BCD' + AB'C'D'$

UNIT-III

5 a) A combinational circuit is defined by the following three Boolean functions. Design the circuit with a decoder and external gates. 7 Marks

$F_1 = X'Y'Z' + XZ; \quad F_2 = XY'Z' + X'Y; \quad F_3 = X'Y'Z + XY$

b) Describe the working of a code converter that does binary to gray code conversion. The converter has 3 input lines. 7 Marks

(OR)

6 Design a combinational circuit with four inputs and four outputs. The output generates the 2's complement of the input binary number. 14 Marks

UNIT-IV

7 a) Draw a 3-bit parallel load register. Use D flip flops and explain its operation. 7 Marks

b) Construct a BCD ripple counter using JK flip-flops that can be cleared asynchronously and an external NAND gate. 7 Marks

(OR)

8 a) Explain the operation of MSJK flip-flop using NAND gates. 8 Marks

b) Reduce the number of states in the following state table and tabulate the reduced state table. 6 Marks

Present State	Next State		Output	
	$x = 0$	$x = 1$	$x = 0$	$x = 1$
a	*f*	*b*	0	0
b	*d*	*c*	0	0
c	*f*	*e*	0	0
d	*g*	*a*	1	0
e	*d*	*c*	0	0
f	*f*	*b*	1	1
g	*g*	*h*	0	1
h	*g*	*a*	1	0

UNIT-V

9 Implement the following two Boolean functions with a PLA: 14 Marks

$$F_1(A, B, C) = \Sigma m(0, 1, 2, 4); \quad F_2(A, B, C) = \Sigma m(0, 5, 6, 7)$$

(OR)

10 Derive the PLA programming table for the combinational circuit that squares a 3 bit number and draw the PLA circuit. 14 Marks

CODE No.: 16BT1BS01 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

ENGINEERING CHEMISTRY

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define hardness of water and give various units of hardness, interrelate various units with p.p.m.	7 Marks
	b)	Explain the various disadvantages of hard water in domestic and industrial use.	7 Marks

(OR)

2		What is the principle of EDTA method? Estimate the hardness of water by EDTA method.	14 Marks

UNIT-II

3		What are engineering plastics? Discuss their general properties and applications.	14 Marks

(OR)

4		Define doped conducting polymer. Illustrate p-doped and n-doped conducting polymers.	14 Marks

UNIT-III

5		Explain the properties of nanomaterials. Why the properties of nanomaterials differ from bulk materials?	14 Marks

(OR)

6		Explain the synthesis of nanomaterials by Sol-Gel method. Draw a rough diagram.	14 Marks

UNIT-IV

7		Define EMF of an electrochemical cell. Discuss the construction and representation of electrochemical cell.	14 Marks

(OR)

8	a)	Define Battery. Write the classification of batteries give suitable examples.	7 Marks
	b)	How does fuel cell differ from battery? Mention the advantages of fuel cells.	7 Marks

UNIT-V

9		Define lubricant. Summarize the classification of lubricants.	14 Marks

(OR)

10	a)	Discuss the significance of aniline points, neutralization number and mechanical strength.	7 Marks
	b)	Write the types of corrosion. Summarize them.	7 Marks

CODE No.: 16BT1BS02 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

ENGINEERING PHYSICS

[Civil Engineering, Mechanical Engineering, Computer Science and Engineering, Information Technology and Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	With the help of a suitable diagram, explain the principle, construction and working of a semiconductor laser. Write the advantages and drawbacks of semiconductor laser.	11 Marks
	b)	Estimate the wavelength of semiconductor laser made up of GaAsP, which has a band gap of 1.9eV	3 Marks
		(OR)	
2	a)	Why laser is different from ordinary light sources.	4 Marks
	b)	Derive the relation between spontaneous emission and stimulated emission based on Einstein's coefficients.	10 Marks

UNIT-II

3	a)	Describe origin of energy band formation in solids.	6 Marks
	b)	Distinguish between conductors, semiconductors and insulators based on band theory.	8 Marks
		(OR)	
4	a)	Define matter waves. Derive the expression for de-Broglie wavelength for matter waves.	10 Marks
	b)	Calculate the de Broglies wavelength associated with a proton moving with a velocity of $1/10^{th}$ of velocity of light. (Mass of proton is 1.67×10^{-27} kg).	4 Marks

UNIT-III

5	a)	Predict the theory behind the formation of p-n junction and explain its energy band diagram.	12 Marks
	b)	Calculate the wavelength of light emitted by a LED source, made up of GaAs with band gap of 1.6eV.	2 Marks
		(OR)	
6		What is the principle of photo diode? Construct and explain the working mechanism of photo diode.	14 Marks

UNIT-IV

7	a)	How the reverberation and reverberation time influences the acoustically good hall.	6 Marks
	b)	Distinguish between echo and reverberation time. A classroom has diminutions $20 \times 15 \times 5m^3$, the reverberation time is 3.5sec. Calculate the total absorption of its surfaces and the average absorption coefficients.	8 Marks
		(OR)	
8	a)	Explain Meissner's effect. Show that superconductors exhibits diamagnetic nature.	7 Marks
	b)	Differentiate Type-I and Type-II superconductors.	7 Marks

UNIT-V

9	a)	Deduce the procedure to find the Miller Indices and mention its significance.	10 Marks
	b)	Sketch the planes of (110) (101) (100) (111) and directions of [110] [112] in a cubic lattice.	4 Marks
		(OR)	
10	a)	Explain any one method of fabrication of nanomaterials.	7 Marks
	b)	List any seven applications of nanomaterials.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

TECHNICAL ENGLISH

[Electrical and Electronics Engineering, Electronics and Communication Engineering Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit.
All questions carry equal marks.

UNIT-I

1	Interpret the constructive classification of non-verbal communication with suitable examples.	14 Marks
	(OR)	
2	How is language a tool of communication? Explain the recursive nature of Language.	14 Marks

UNIT-II

3	List out the reasons for poor listening.	14 Marks
	(OR)	
4	Describe the traits to be inculcated to become a good listener.	14 Marks

UNIT-III

5	Illustrate the most possible ways to elevate confidence, clarity and fluency in speeches and presentations.	14 Marks
	(OR)	
6	"Effective Speaking plays a pivotal role in Academic, Professional and Personal life". Discuss.	14 Marks

UNIT-IV

7	Explain and illustrate various ways of inferring a word's meaning in a context.	14 Marks
	(OR)	
8	List the various purposes of reading and compare the guidelines for reading general and journal articles.	14 Marks

UNIT-V

9	Elaborate Technical writing and write the salient features based on its importance and characteristics.	14 Marks
	(OR)	
10	Elucidate the various characteristics of technical writing.	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

TRANSFORMATION TECHNIQUES AND PARTIAL DIFFERENTIAL EQUATIONS

[Civil Engineering, Electrical and Electronics Engineering, Mechanical Engineering, Electronics and Communication Engineering, Computer Science and Engineering, Electronics and Instrumentation Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 If $f(x)=\begin{cases} 0, & -\pi \le x \le 0 \\ \sin x, & 0 \le x \le \pi \end{cases}$ then show that 14 Marks

$f(x)=\frac{1}{\pi}+\frac{\sin x}{2}-\frac{2}{\pi}\sum_{n=1}^{\infty}\frac{\cos 2nx}{4n^2-1}$, and hence establish that

$\frac{1}{1.3}-\frac{1}{3.5}+\frac{1}{5.7}-\ldots=\frac{1}{4}(\pi-2)$.

(OR)

2 Write Fourier series of f(x) in the interval $(0, 2\ell)$ and develop the series for 14 Marks

$f(x)=2x-x^2$ in $(0, 3)$ and hence deduce that $\frac{1}{1^2}-\frac{1}{2^2}+\frac{1}{3^2}-\frac{1}{4^2}+\ldots=\frac{\pi}{12}$.

UNIT-II

3 State Fourier sine transform of f(x) and develop a Fourier sine transform of 14 Marks

$e^{-|x|}$ and hence show that $\int_0^{\infty}\frac{x\sin mx}{1+x^2}dx=\frac{\pi e^{-m}}{2}$, $m>0$.

(OR)

4 State Fourier cosine transform of f(x). Find the Fourier cosine transform of 14 Marks

$f(x)=\frac{1}{1+x^2}$ and applying it find Fourier sine transform of $\varphi(x)=\frac{x}{1+x^2}$.

UNIT-III

5 Find the value of; 14 Marks

i) $L\left(\int_0^t te^{-t}\sin 4t\,dt\right)$. (ii) $\int_0^{\infty}\frac{e^{-t}-e^{-2t}}{t}dt$.

(OR)

6 a) Find L (f(t)) where $f(t)=\begin{cases}\sin t, & 0<t<\pi \\ 0, & \pi<t<2\pi\end{cases}$. 7 Marks

b) Find: i) $L^{-1}\left(\frac{s-2}{s^2-5s+6}\right)$. ii) $L^{-1}\left(\frac{1}{s(s+1)(s+2)}\right)$. 7 Marks

UNIT-IV

7 a) Calculate u_2 and u_3, if $U(z)=\frac{2z^2+4z+12}{(z-1)^4}$. 7 Marks

b) Applying Z-transforms, solve $\mathbf{u_{n+2}+2u_{n+1}+u_n=0}$, given that $\mathbf{u_0=u_1=0}$. 7 Marks

(OR)

8 a) State the convolution theorem and applying it find the inverse Z - transform of $\frac{z^2}{(z-4)(z-5)}$. 7 Marks

b) Find $Z^{-1}\left[\frac{z}{z^2+11z+24}\right]$ by using partial fractions method. 7 Marks

UNIT-V

9 a) Determine the partial differential equation by eliminating arbitrary constants **a**, **b** and **c** from $\frac{x^2}{a^2}+\frac{y^2}{b^2}+\frac{z^2}{c^2}=1$. 7 Marks

b) By the technique of separation of variables, solve $y^3 z_x + x^2 z_y = 0$. 7 Marks

(OR)

10 Design a solution for the differential equation $\frac{\partial^2 u}{\partial x^2} = \frac{\partial u}{\partial y} + 2u$ in the form $u = f(x)\, g(y)$ satisfying the conditions $u = 0$, $\frac{\partial u}{\partial x} = 1 + e^{-3y}$ when $x = 0$ for all values of y. 14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

BUILDING MATERIALS AND CONSTRUCTION TECHNOLOGY

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Summarize the various causes of decay of wood work and their preservation.	14 Marks
		(OR)	
2	a)	How is clay tiles manufactured? Explain its properties and applications.	9 Marks
	b)	Write a brief note on latest developments in the field of manufacturing of tiles.	5 Marks

UNIT-II

3		Distinguish the tests conducted on cement to find its properties.	14 Marks
		(OR)	
4	a)	What is meant by hydration of cement? What is its importance?	9 Marks
	b)	Write a brief note on latest developments in the field of manufacturing of cement.	5 Marks

UNIT-III

5		Explain the various properties and types of Glass? How are they classified?	14 Marks
		(OR)	
6	a)	Discuss the ceramic materials in detail.	7 Marks
	b)	Bring out the latest developments in the field of manufacturing of glass and aluminium.	7 Marks

UNIT-IV

7	a)	Propose a plan for Dog Legged stair of a building with 3.6m as floor height. The stair room measures 2.5m x 5.25m.	7 Marks
	b)	Compare the advantages and disadvantages of flat roofs over pitched roof.	7 Marks
		(OR)	
8	a)	State the advantages and disadvantages of stabilized blocks, precast doors and precast roofs.	7 Marks
	b)	Illustrate king post roof truss with neat labeled sketch along with joints.	7 Marks

UNIT-V

9	a)	Enumerate different types of heavy earth moving equipments and its specific uses.	7 Marks
	b)	Discuss the advantages of using machines over manual labour.	7 Marks
		(OR)	
10	a)	State the requirements of a good form work? Draw the neat sketch of formwork for an RCC column and indicate parts.	7 Marks
	b)	Briefly describe the properties and uses of sound insulating materials.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

ENGINEERING MECHANICS

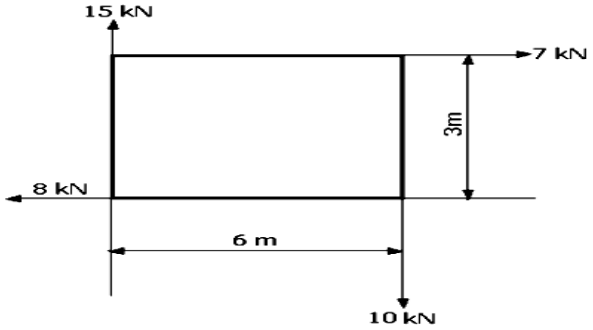
[Civil Engineering, Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

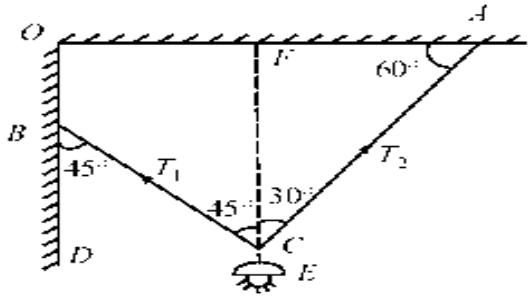
Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Determine the magnitude and direction of a single force which keeps the system in equilibrium. The system of forces acting is shown in figure below. 7 Marks



b) An Electric light fixture weighing 15N hangs from a point *C* by two strings *AC* and *BC*. *AC* is inclined at 60^0 to the horizontal and *BC* at 45^0 to the vertical as shown in figure below. Determine the forces in the strings *AC* and *BC*. 7 Marks



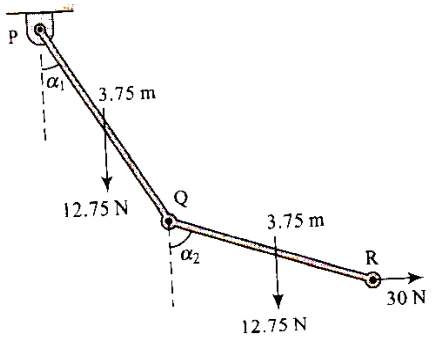
(OR)

2 a) The resultant of the two forces when they act at an angle of 65^0 is 20N. If the same forces are acting at right angles their resultant is 16.5N, determine the magnitude of the two forces. 7 Marks

b) A force of 100N makes angles of 30^0, 60^0 and 100^0 with x, y and z axes respectively. Find the components of the force along the x, y and z axes. 7 Marks

UNIT-II

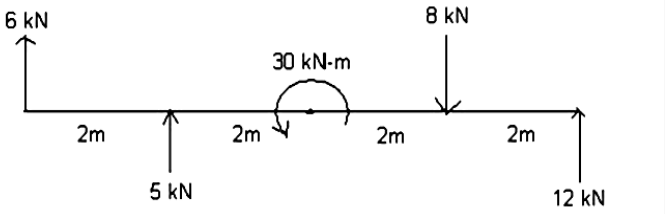
3 Two uniform bars from a link are shown in Figure. Bars are of 3.75m in length and 12.75N weight. The system is pulled with a force of 30 N. Using method of virtual work, determine the angles α_1 and α_2 with the verticals. 14 Marks



(OR)

4 a) Define Moment of a force Couple. 3 Marks

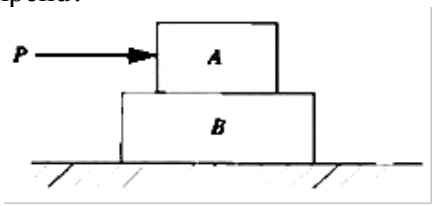
b) Determine and locate the resultant R of the forces and one couple acting on the beam as shown in figure. 4 Marks



c) Explain different types of supports, beams and loads in detail with neat sketches. 7 Marks

UNIT-III

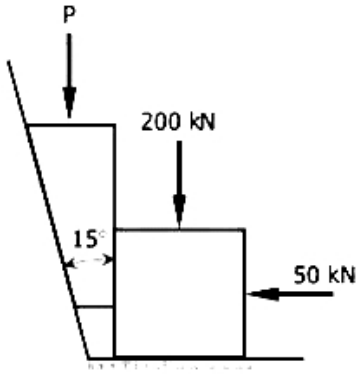
5 a) The coefficient of friction between a copper block A and an aluminum block B is 0.3 and between the block B and the floor is 0.2. The weight of block A is 30N and of block B is 20N as shown in given figure. What force P will cause the motion of block A to impend? 7 Marks



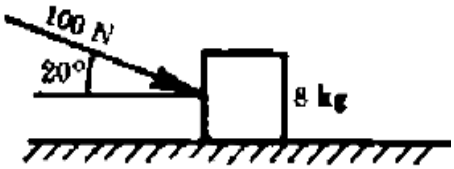
b) Define cone of friction and wedge friction. Write the laws of friction. 7 Marks

(OR)

6 a) Determine the force P required to start the wedge shown in figure. The angle of friction for all surfaces in contact is 15°. 7 Marks



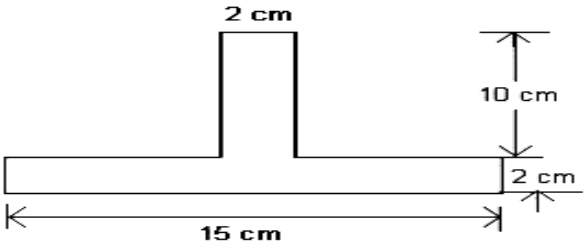
b) The 8 kg block is acted upon by a 100N force as shown in figure below. If the coefficient of sliding friction is 0.30, determine the work done by all forces as the block moves 4m to the right. 7 Marks



UNIT-IV

7 a) State and prove theorems of Pappus–Guldinus. 7 Marks

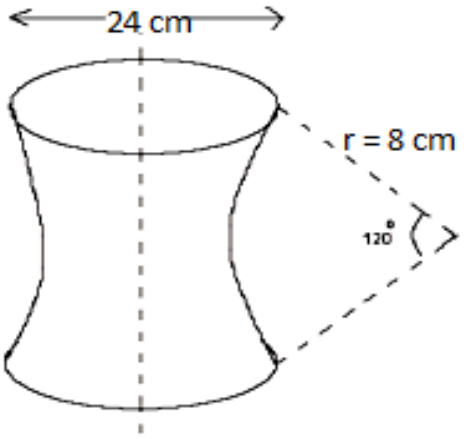
b) Find the centroid of the inverted T section shown in below figure. 7 Marks



(OR)

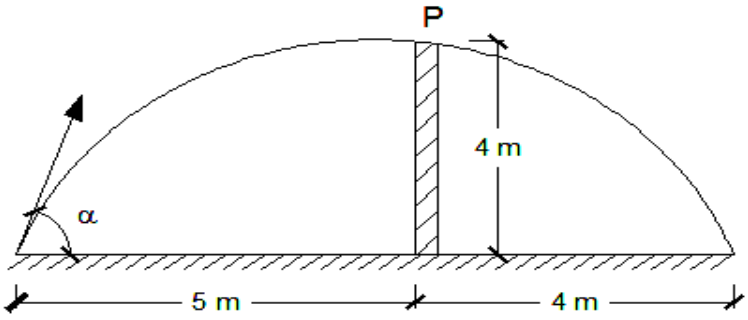
8 a) Distinguish centroid and centre of gravity. Distinguish moment of inertia and mass moment of inertia. 7 Marks

b) Determine the volume of the body shown in figure using Pappus-Guldinus theorem. 7 Marks



UNIT-V

9 Find the least initial velocity with which a projectile is to be projected so that it clears a wall 4m height located at a distance of 5m, and strikes the horizontal plane through the foot of the wall at a distance 4m beyond the wall shown in figure. The point of projection is at the same level as the foot of the wall. 14 Marks



(OR)

10 a) An aeroplane has a mass of 25000kg and its engines develop a total thrust of 40KN along the run way. The force of air resistance to motion of aeroplane is given by $R = 2.25V^2$ where 'V' is m/s and R is in Newton. Determine the length of runway required if the plane takes off and becomes airborne at a speed of 240km/hr. 7 Marks

b) An elevator being lowered into mine shaft starts from rest and attains a speed of 10m/s within a distance of 15 metres. The elevator alone has a mass of 500kg and it carries a box of mass 600kg in it. Find the total tension in cables supporting the elevator, during this accelerated motion. Also find the total force between the box and the floor of the elevator. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING

[Civil Engineering, Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) State Kirchoff's voltage law (KVL) and Kirchoff's current law (KCL) with an example. 4 Marks

b) Derive an expression for determining the equivalent capacitance of two series and parallel connected capacitors C_1 and C_2. 4 Marks

c) Find the current through 3 Ω resistor shown in Fig. 1. 6 Marks

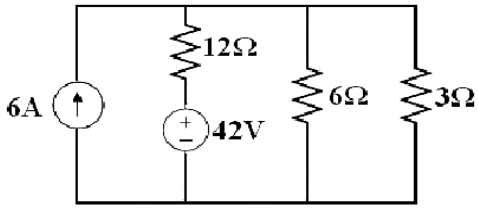


Fig. 1

(OR)

2 a) Find the resistance between the points B and C of the circuit shown Fig.2. 10 Marks

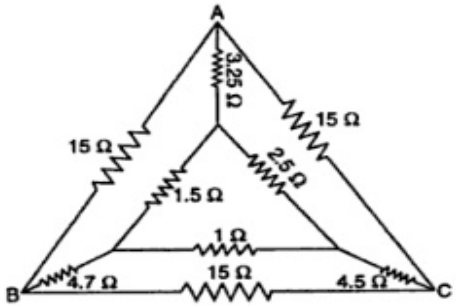


Fig. 2

b) Define the terms: potential difference, mmf, emf, current and power. 4 Marks

UNIT-II

3 a) Explain the following terms with respect to alternating quantities 6 Marks
i) Phase and phase difference ii) Frequency and period.

b) With a neat schematic, explain the principle of generation of alternating voltage. 8 Marks

(OR)

4 Establish the phase relationship between voltage and current in series and parallel combinations of 14 Marks
i) RL circuit, ii) RC circuit and iii) RLC circuits.
Sketch the phasor diagrams and impedance diagrams in all the cases.

UNIT-III

5 With a neat sketch, explain the construction of a DC generator. 14 Marks

(OR)

6 a) Explain the principle of operation of a DC generator. 7 Marks

b) Derive the EMF equation of a DC generator. 7 Marks

UNIT-IV

7	a)	Describe the properties of materials used for piezo-electric transducers. Derive the expressions for voltage and charge sensitivities.	10 Marks
	b)	A barium pickup has the dimensions of 5 mm x 5mm x 1.25 mm. The force acting on it is 5 N. The charge sensitivity of barium titanate is 150 pC/n and its permittivity is 12.5×10^{-9} F/m. If the modules of elasticity barium titanate is 12×10^{6} N/m^2, calculate the strain, charge and capacitance.	4 Marks

(OR)

8	a)	Explain the different parts in Data acquisition system in detail.	7 Marks
	b)	Explain about the data loggers.	7 Marks

UNIT-V

9	a)	Derive the expressions for ripple factor of full wave rectifier with and without a capacitive filter.	10 Marks
	b)	A half wave rectifier is fed by 220 V, 50Hz via a step down transformer of turns ratio is 11:1. Find i) The output DC. ii) Peak inverse voltage under no load condition.	4 Marks

(OR)

10	a)	Derive the relation between the BJT parameters α, β and γ.	7 Marks
	b)	Draw the circuit diagram of NPN junction transistor in CE configuration and describe its characteristics.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

ENGINEERING MATERIALS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write the various thermal properties and explain them.	7 Marks
	b)	Explain the relation between thermal conductivity and electrical conductivity.	7 Marks
		(OR)	
2	a)	Write the various electrical properties and explain them.	7 Marks
	b)	Explain following mechanical properties briefly. i) Creep. ii) Fatigue.	7 Marks

UNIT-II

3		Write down effect of grain boundaries on properties of metals.	14 Marks
		(OR)	
4		Explain the different methods for calculation of grain size.	14 Marks

UNIT-III

5		To get the maximuJm productivity we can manufacture the cast irons at eutectic temperature. Justify.	14 Marks
		(OR)	
6		Write the properties and applications of copper and its alloys.	14 Marks

UNIT-IV

7		Mention the properties of polymer matrix composites and in what way these are helpful to environmental applications comparing with metals.	14 Marks
		(OR)	
8		Compare and contrast Metal-Matrix Composites (MMC) and Ceramic-Matrix Composites (CMC).	14 Marks

UNIT-V

9	a)	Explain any two destructive tests conducted for testing of materials.	7 Marks
	b)	Explain any two non-destructive tests conducted for testing of materials.	7 Marks
		(OR)	
10	a)	Compare and contrast between destructive and non-destructive tests.	7 Marks
	b)	Explain the Brinell Hardness test.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

ELECTRONIC DEVICES AND CIRCUITS

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Explain the V-I characteristics of Zener diode and distinguish between Avalanche and Zener Break downs. 10 Marks

b) Sketch V-I characteristics of a PN diode for the following conditions: 4 Marks
R_f= 0, R_r=0, V_γ =0.6

(OR)

2 Explain the operation of inductor filter (FWR) and derive expression for ripple factor. 14 Marks

UNIT-II

3 a) With a neat diagram, explain the various current components in an NPN bipolar junction transistor and hence derive general equation for collector current I_C. 8 Marks

b) Describe the significance of the terms 'α' and 'β'. Establish a relation between them. 6 Marks

(OR)

4 a) Draw the emitter feedback bias circuit and obtain the expression for the stability factor. 10 Marks

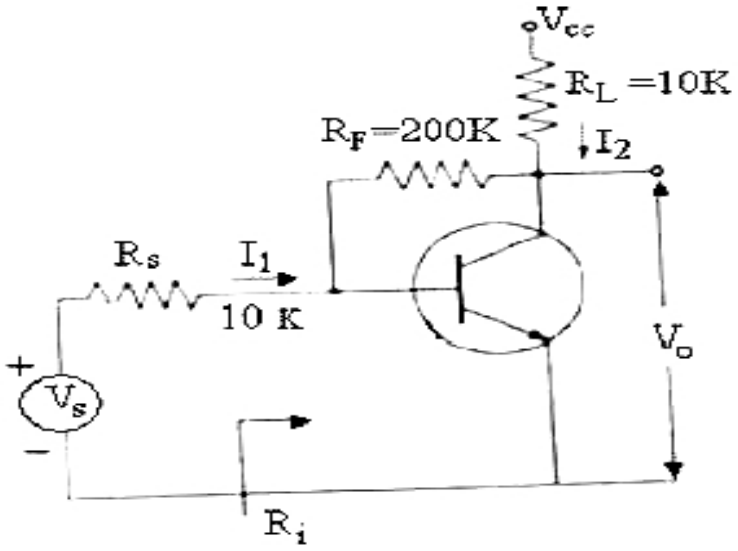
b) Define biasing. Draw the fixed bias circuit and obtain the expression for the stability factor. 4 Marks

UNIT-III

5 Compute current gain, voltage gain, input and output impedance of the CB amplifier, if it is driven by a voltage source of internal resistance R_s=1KΩ. The load impedance is R_L=1KΩ. The transistor parameters are h_{ib}= 22KΩ, h_{fb}= -0.98, h_{rb}=2.9 x 10^{-4}, h_{ob}= 0.5μA/V. 14 Marks

(OR)

6 Determine A_I, A_V, R_I, R_0 of a transistor with h_{ie} = 1.1KΩ, h_{fe} = 50, h_{re} = 205 x 10^{-4}, h_{oe} = 25μA/V is connected in CE configuration as shown in figure. 14 Marks



UNIT-IV

7		Draw the small-signal model of common drain FET amplifier. Derive expressions for voltage gain and output resistance.	14 Marks

(OR)

8	a)	Compare enhancement and depletion modes of a MOSFET with the help of its characteristics and construction.	7 Marks
	b)	Write the expressions for mid-frequency gain of a FET common source.	7 Marks

UNIT-V

9		Explain how the UJT can be used as a negative-resistance device with the aid of static characteristics.	14 Marks

(OR)

10		Explain the tunneling phenomenon. Explain the characteristics of tunnel diode with the help of necessary energy band diagrams.	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

BASIC ELECTRONIC DEVICES AND CIRCUITS

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Explain the operation of a p-n junction diode in forward biased and reverse biased condition. Draw its V-I characteristics. 14 Marks

(OR)

2 Draw the circuit of a half-wave-rectifier and find out the ripple factor, % regulation, Efficiency and PIV. 14 Marks

UNIT-II

3 Define Early-effect and explain why it is called as base-width modulation? Discuss its consequences in transistors in detail. 14 Marks

(OR)

4 a) With reference to bipolar junction transistors, define the following terms and explain. 7 Marks
   i) Emitter efficiency.
   ii) Base Transportation factor.
   iii) Large signal current gain.

b) How transistor acts as an amplifier? 7 Marks

UNIT-III

5 a) Explain the operation of FET with its characteristics and explain the different regions in transfer characteristics. 10 Marks

b) Give the classifications of FETs and their application areas. 4 Marks

(OR)

6 With the help of neat sketches and characteristic curves, explain the construction and operation of a JFET and mark the regions of operation on the characteristics. 14 Marks

UNIT-IV

7 Explain voltage shunt feedback amplifiers and current series feedback amplifiers. 14 Marks

(OR)

8 a) What do you understand by feedback in amplifiers? Explain the terms feedback factor and open loop gain. 8 Marks

b) Calculate the gain, input impedance, output impedance of voltage series feedback amplifier having A=300, R_i=1.5KΩ, R_O=50KΩ and β=1/12. 6 Marks

UNIT-V

9 Explain the tunneling phenomenon. Explain the characteristics of tunnel diode with the help of necessary energy band diagrams. 14 Marks

(OR)

10 Explain about : 14 Marks
   i) Varactor diode.
   ii) Schottky Barrier diode with necessary sketches.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

FOUNDATIONS OF DATA STRUCTURES

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Compare and Contrast merge sort and Quick sort.	14 Marks
		(OR)	
2		Illustrate counting sort algorithm with an example.	14 Marks

UNIT-II

3	a)	Discuss about the exceptional conditions of stack.	7 Marks
	b)	List out the drawback of linear queue? How do overcome it? Explain.	7 Marks
		(OR)	
4		Explain suppose we have a data representation for mapping two stacks into a one dimensional array, so that the elements of first stack are stored at odd index values and the elements of other stack are stored at even index values. Write an algorithm to add and delete elements from these stacks.	14 Marks

UNIT-III

5	a)	Define header node with an example.	7 Marks
	b)	Write a C function to insert the element at the end of the list.	7 Marks
		(OR)	
6		Write a C function to insert an element into a circular linked list in the beginning and at the end.	14 Marks

UNIT-IV

7		Explain the three standard ways of traversing a binary tree with a recursive algorithm.	14 Marks
		(OR)	
8		Construct a binary search tree by inserting the following data sequentially. 45,32,70,67,21,85,92,40 and explain steps involved in detail	14 Marks

UNIT-V

9		Write a C program to implement depth first traversal of a graph.	14 Marks
		(OR)	
10	a)	How do you pick a good hash function?	7 Marks
	b)	How do we deal with collisions?	7 Marks

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CODE No.: 16BT21201 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

OBJECT ORIENTED PROGRAMMING THROUGH C++

[Computer Science and Engineering, Information Technology and Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Discuss different ways of defining member functions with example.	14 Marks
		(OR)	
2	a)	Define a class and an object with syntax.	4 Marks
	b)	With the help of example, explain how data hiding and encapsulation characteristics are achieved in C++.	10 Marks

UNIT-II

3		With a suitable example, explain various looping statements in CPP. Write a program to print Pascal's Triangle.	14 Marks
		(OR)	
4	a)	Define function. What are the different types of functions available in C++?	7 Marks
	b)	Write a function that extracts a digit from an integer.	7 Marks

UNIT-III

5		Write a CPP program to implement Binary search algorithm using arrays.	14 Marks
		(OR)	
6		Implement the concept of Linear search algorithm using arrays.	14 Marks

UNIT-IV

7		Define Constructor, Copy Constructor and Destructor in C++ each with an Example.	14 Marks
		(OR)	
8		Write a C++ program to define a class called box with length, breadth and height as data members, and input (), print () and volume () as member function.	14 Marks

UNIT-V

9		Explain different types of inheritance with block diagram and an example for each.	14 Marks
		(OR)	
10		Define a function template giving its syntax. Write a C++ program to implement array representation of a stack for integers, characters and floating point numbers using class template.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

DIGITAL LOGIC DESIGN

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain any five properties of Boolean Algebra with example.	7 Marks
	b)	Compare BCD and binary system of coding.	7 Marks
		(OR)	
2	a)	Explain the rules for binary subtraction using 1's and 2's complement methods and subtract the following numbers using 2's complement method. +39-(+16) +62-(+29)	8 Marks
	b)	Define self complementing code? Briefly write about any two self complementing codes.	6 Marks

UNIT-II

3	a)	Draw NAND Logic Diagram that implements the complement of the following function F(A,B,C,D)=∑(0,1,2,3,4,8,9,12).	7 Marks
	b)	Simplify the following Boolean expression using four variable map method $wxy + yz + xy'z + x'y$.	7 Marks
		(OR)	
4	a)	Draw a logical circuit using basic gates to implement the following function f (A, B, C, D, E) = Σm (0, 2, 4, 6, 8, 16, 18, 20, 22, 24, 26, 28, 30) + Σd (3, 7, 11, 15, 19, 23, 27, 31).	7 Marks
	b)	Simplify the following using K-Map f (A, B, C, D) = Σm (0, 3, 5, 6, 9, 10, 12, 15).	7 Marks

UNIT-III

5	a)	With the help of a circuit diagram, explain the operation of series Full adder and compare its performance with parallel adder.	8 Marks
	b)	Describe the function of an Encoder and list its applications.	6 Marks
		(OR)	
6	a)	Design a Half adder using basic gates and explain its truth table.	6 Marks
	b)	With logic diagram explain how a Demultiplexer can be obtained from a Decoder.	8 Marks

UNIT-IV

7	a)	Illustrate the Magnitude comparator with logic diagrams.	7 Marks
	b)	Describe the Binary subtractors with truth table.	7 Marks
		(OR)	
8	a)	Discuss the disadvantages of level triggering. Explain the effects of level triggering in a JK flip flop.	7 Marks
	b)	Derive transition table and output map for an asynchronous sequential circuit has two internal states and one output if excitations and output functions are $Y_1 = x_1x_2 + x_1y_2' + x_2' y_1$ $Y_2 = x_2 + x_1y_1' y_2 + x_1' y_1$ $Z = x_2 + y_1$	7 Marks

UNIT-V

9	a)	Explain the method of Error detection and correction.	7 Marks
	b)	Explain the features of PAL.	7 Marks
		(OR)	
10	a)	Explain in detail about sequential programmable devices.	7 Marks
	b)	Explain in detail about ROM.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2019

SPECIAL FUNCTIONS AND COMPLEX ANALYSIS

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Form the PDE by eliminating the arbitrary constants from $z = ax + by + a^2 + b^2$.

b) Solve the equation $x^2 \frac{\partial u}{\partial x} + y^2 \frac{\partial u}{\partial y} = 0$.

2. a) Define Beta and Gamma functions. Also prove that $\beta\left(m, \frac{1}{2}\right) = 2^{2m-1}\beta(m, m)$.

b) Prove that $\frac{d}{dx}\left\{J_n^2(x)\right\} = \frac{x}{2n}\left\{J_{n-1}^2(x) - J_{n+1}^2(x)\right\}$.

3. a) Separate $\tan^{-1}(x + iy)$ into real and imaginary parts.

b) Find the analytic function whose real part is $\frac{\sin 2x}{\cosh 2y - \cos 2x}$.

4. a) Evaluate $\int_{(0,0)}^{(1,1)} (3x^2 + 4xy + ix^2)dz$ along $y = x^2$.

b) Evaluate $\int_c \frac{e^{2z}}{(z-1)(z-2)} dz$,where **c** is the circle $|z| = 3$.

5. a) Find the Taylor's series of $f(z) = \frac{z-1}{z+1}$ about the point $z = 1$.

b) Find all poles of $f(z) = \frac{1}{1+z^4}$ and find residues at all it's poles.

6. a) Evaluate $\oint_C \frac{e^{zt}}{(z^2 + 2z + 2)} dz$ where C: $|z| = 3$,t Є R, by using Residue theorem.

b) Show that $\int_0^{2\pi} \frac{1}{1 - 2a\cos\theta + a^2} d\theta = \frac{2\pi}{1 - a^2}$ (0<a<1) using contour integration.

7. a) State and prove Roche's theorem.

b) Use Roche's theorem to find the number of zeros of the polynomial $z^{10} - 6z^7 + 3z^3 + 1$ **if** $|z| < 1$.

8. a) Show that the image of the hyperbola $x^2 - y^2 = 1$ is the lemniscate $\rho^2 = \cos 2\phi$.

b) Find the bilinear transformation which maps 1, i, -1 to 2, i, -2 respectively. Find the fixed and critical points of the transformation.

CODE No.:10BT30105 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2019

FLUID MECHANICS-I

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What is the difference between cohesion and adhesion?
b) State and explain Newton's law of viscosity.
c) Determine the viscosity of a liquid having kinematic viscosity 6 stokes and specific gravity 2.0.

2. a) Show that the centre of pressure always lies below the centre of gravity in the case of a lamina immersed in a liquid, the lamina being oriented in any fashion other than horizontal.
b) Convert a pressure head of 100m of water to i) kerosene of Sp.Gr. 0.81 and ii) carbontetra chloride of Sp.gr of 1.6.

3. a) A two dimensional flow is described by the velocity components:
$u = 5x^3$ and $v = -15x^2y$
Determine the stream function, potential function (if it exists) and acceleration at P (x = 1 m and y = 2 m)
b) Giving suitable examples, define uniform, non uniform, steady and unsteady flows.

4. a) A pipe 250m long has a slope of 1in 100 and tapers from 1.5m diameter at the higher end to 0.7m at the lower end. The quantity of water flowing is 700 lit/sec. If the pressure at the higher end is 60KPa, find the pressure at the lower end.
b) Mention any five practical applications of Bernoulli's theorem.

5. a) Derive Darcy - Weisbach formula for calculating loss of head due to friction in a pipe.
b) A compound pipe line 1650m long made up of pipes 450mm diameter for 900m, 375mm for 450m and 300mm for 300m, is required to be replaced by a pipe of uniform diameter. Find the diameter of the new pipe, assuming the length to remain the same.

6. a) What do you understand by velocity of approach? Derive an expression for the discharge over a rectangular weir with velocity of approach.
b) The head of water over a triangular notch of angle 60^0 is 50cm and coefficient of discharge is 0.62. The flow measured by it is to be within an accuracy of $\pm$ 1.5%. Find the limiting values of the head.

7. a) Derive an expression for mean velocity for laminar flow through a pipe.
b) How would you distinguish between hydro dynamically smooth and rough boundaries?

8. Explain the following :
a) Similitude and its types.
b) Different types of non-dimensional numbers and their use.
c) Hydrodynmically smooth and rough pipes.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2019

CIRCUIT THEORY

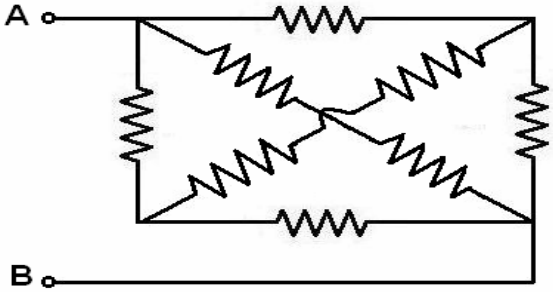
[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

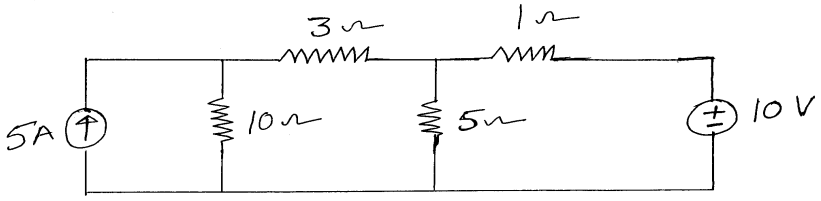
1. a) Differentiate between independent and dependent sources. What is their circuit representation?

b) Find the equivalent resistance between AB in the circuit shown in figure. All resistances are equal to 1Ω.



2. a) Explain the concept of Nodal and Mesh analysis.

b) Write node voltage equations and determine the currents in each branch for the network shown below.



3. a) Define average value, RMS value, form factor and peak factor.

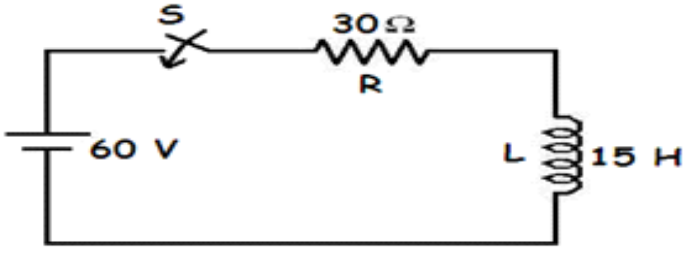
b) Obtain average value, RMS value, form factor and peak factor of a full wave rectified sine wave.

4. a) Derive an expression for power in a series RL circuit excited by a sinusoidal voltage $v(t) = V_m \text{ Sin } \omega t$.

b) The current in a circuit is given by I=(3+j5)A when the applied voltage is V=(150+j150)V. Determine the complex expression for the impedance, power factor and the real power.

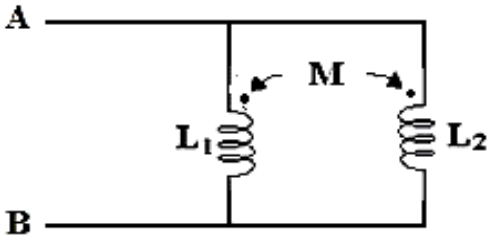
5. a) Find the expressions for i(t), V_R and V_L for an R-L series circuit with **dc** excitation.

b) A series R - L circuit with R = 30Ω and L = 15H with a constant voltage V = 60V applied at t = 0 as shown in figure. Determine the current I, the voltage across resistor and the voltage across inductor.



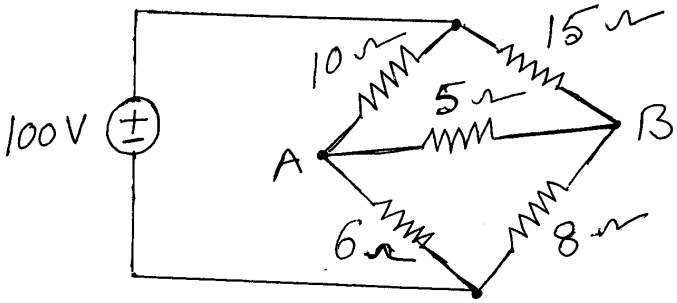
6. a) Define coefficient of coupling K and derive the relation between self inductances L_1, L_2, mutual inductance M and coefficient of coupling K.

b) Calculate the equivalent inductance of the circuit shown below between the terminals A and B.



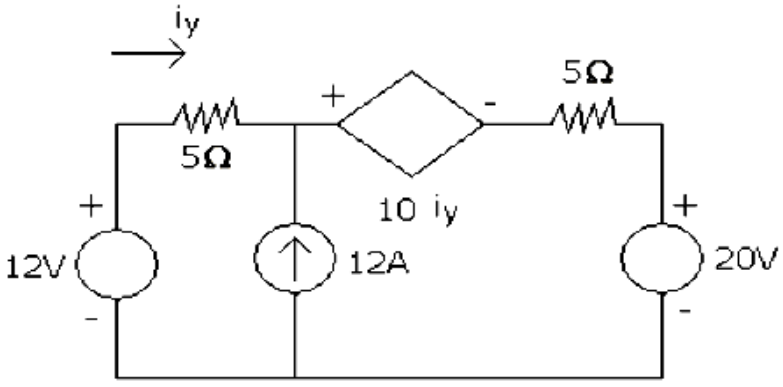
7. a) State and explain superposition theorem.

b) Use thevinin's theorem to find the current through 5Ω resistor in below figure.



8. a) State and explain reciprocity theorem.

b) Calculate the current i_y in the network of figure using superposition theorem.



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2019

SIGNALS AND SYSTEMS

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Define and sketch the basic discrete time signals. State the conditions for a given function to be periodic.
b) Determine whether the following function is periodic or not A sin2t + b cosπ t.

2. a) Find Fourier Transform of the function $x(t) = e^{-3t}[u(t+2) - u(t-3)]$.
b) State and prove frequency and time shifting properties of Fourier Transform.

3. State and prove the following Fourier transforms.
(i) Time shifting property. (ii) Differentiation Property.
(iii) Time and frequency scaling property.

4. a) Define correlation of signals. What is its significance? Give the relation between auto correlation and convolution of signals.
b) Find the Fourier transform of the signal $g(t) = e^{-4t^2}$ using suitable properties.

5. a) The waveform $V(t)= e^{-t/\zeta}$ u(t) is passed through a high pass RC circuit having a time constant ζ. Find the energy spectral density at the output of the circuit.
b) Find the cross correlation of the functions sin ωt and cos ωt.

6. a) State and prove the sampling theorem for band limited signals.
b) Explain different types of sampling methods.

7. a) Write the properties of region of convergence.
b) State and prove the time shifting and time integration property of Laplace transform.

8. a) Find the Z-transform of $x[n] = (1/2)^n u[n] + (1/3)^n u[-n-1]$.
b) A finite sequence x[n] is defined as x[n] = {5,3,-2,0,4,-3}. Find X[Z] and its ROC.

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CODE No.:10BT30421 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2019

ELECTRONIC DEVICES AND CIRCUITS

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain different Breakdown mechanisms in PN junction diodes.
b) Write the diode current equation and explain.

2. a) With circuit and necessary waveforms, explain the operation of HWR
b) Derive the expression for ripple factor for the circuit FWR with capacitor filter.

3. a) Draw the CE-configuration of transistor and explain input and output characteristics.
b) Explain how transistor works as amplifier.

4. a) Explain diode compensation circuit for variations in I_C for self bias circuit.
b) How self bias circuit will eliminate drawbacks in fixed bias circuit?

5. Derive the expressions for voltage gain, current gain, Input impedance, output impedance, voltage gain with respect to source and current gain with respect to source for generalized transistor amplifier at low frequencies.

6. a) Draw the structure and explain the static drain and gate characteristics of n-channel JFET.
b) What are different types of FET biasing? Explain in brief.

7. a) Explain different types of negative feedback circuits with the help of block diagrams.
b) Write short notes on condition for Oscillations and classifications of Oscillators.

8. a) Explain the Emitter characteristics of UJT.
b) Explain the V-I characteristics of SCR.

CODE No.:10BT30422 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2019

DIGITAL LOGIC DESIGN

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) How do you represent a number in Binary number? What are the advantages of Octal and Hexadecimal number systems?
b) What do you mean by a self complementing code? Write two self complementing codes.

2. a) Simplify the following Boolean expressions using the Boolean theorems.
(i) (A+B+C) (B'+C) + (A+D) (A'+C) (ii) (A+B) (A+B') (A'+B)
b) Why a NAND and NOR gates are known as universal gates? Simulate all the logical operations using NAND and NOR gates.

3. a) What are SOP and POS forms of Boolean expression.
b) Simplify the Boolean expression using k-map $f(A,B,C,D)=\pi(1,2,3,8,9,10,11,14)+\sum d(7,15)$.

4. a) Design a Half Adder using basic gates and explain its truth table.
b) With logic diagram, explain how a Demultiplexer can be obtained from a Decoder.

5. a) Draw the circuit of a Master -slave JK flip flop and explain its operation with its excitation table.
b) Differentiate combinational and sequential circuits.

6. a) Draw and explain 4-bit universal shift register.
b) Explain the differences between asynchronous and synchronous counters.
Design a MOD-6 ripple counter.

7. a) Explain the method of Error detection and correction.
b) Explain the features of PAL.

8. a) Explain the problems in asynchronous circuits.
b) Explain the methods to eliminate static hazards in asynchronous circuits.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2019

DISCRETE MATHEMATICAL STRUCTURES

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Show that following equivalence.
$(P \rightarrow Q) \wedge (R \rightarrow Q) \Leftrightarrow (P \vee R) \rightarrow Q$.
b) Obtain principal conjunctive normal form of the formula $Q \wedge (P \vee \neg Q)$.

2. a) Are these premises $p \rightarrow r, q \rightarrow r, (p \vee q) \rightarrow r$ consistent? Justify your answer.
b) Write the following statement in the symbolic form.
"Every one who likes fun will enjoy each of these plays".

3. a) Draw the Hasse diagram of the set {2, 4, 8, 16} under the partial ordering relation "divides" and indicate those which are totally ordered.
b) Show that f (x, y)= x^y is a primitive recursive function.

4. a) Consider the semi group (R^+, X) and (R ,+) where R^+ is the set of all positive real numbers with usual meanings of +, X . Let the function f : $R^+ \rightarrow R$ be defined by f(x)= log x for any x $\in$ R^+ . Is f an isomorphism ? Justify.
b) Let **f** be a homomorphism from a group G_1 to the group G_2 then show that
i) if e_1 is the identity in G_1 and e_2 is the identity in G_2 then $f(e_1) = e_2$
ii) $f(a^{-1}) = [f(a)]^{-1}$ for all a $\in$ G_1 .

5. a) In how many ways can be a committee of 5 can be formed from a group of 8 scientists, 6 psychologists and 4 philanthropists?
b) How many ways are there for 10 red balls, 8 green balls and 6 blue balls to be in a line so that at least 2 balls of same color must be placed side by side?

6. a) Find the general solution of the recurrence relation $a_n - 7a_{n-2} + 10_{n-4} = 0$, for n $\geq$ 4.
b) Solve $a_{n+1} = a_n + (2n + 3)$ for n $\geq$ 0, a_0 = 1 by the method of generating function.

7. a) Show that a tree with **n** vertices has exactly (n-1) edges.
b) Show that K_n has a Hamilton circuit whenever $n \geq 3$.

8. a) What is minimum spanning tree? Distinguish between krushkals and prims algorithms.
b) Distinguish between DFS and BFS.

CODE No.:10BT30502 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations June - 2019

DATA STRUCTURES

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Define Abstract Data Type (ADT). Explain how ADTs are implemented.
b) Write an algorithm for Binary Search.

2. What is linked list? Explain various operations on single linked list with algorithm.

3. Give an algorithm which uses a stack to reverse the given string. Show working of your algorithm to reverse the string "India".

4. Explain various Binary Search Tree operations.

5. Describe about various cases that arise while inserting a new node in to an AVL tree with illustrations.

6. Explain about insertion and deletion operation for B-tree with appropriate example.

7. Give algorithms to do BFS and DFS of a graph. With an example describe how these algorithms work.

8. a) Explain the Concept of Open Addressing hashing.
b) Perform the insertion operation for Open Addressing hashing with Quadratic Probing for the list: 10, 54, 89, 18, 49, 65, 36, 97, 23, and 69.

CODE No.:10BT30105 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2018

FLUID MECHANICS-I

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain capillarity and surface tension with neat sketches.
b) A rectangular plate of size 25cm x 50cm weighing 25kgf slides down a 30^0 inclined surface at a uniform velocity of 2m/s. If the uniform 2mm gap between the plate and the inclined surface is filled with oil, determine the viscosity of oil.

2. a) An opening of 1m depth and 3m width is provided in the vertical side of a large tank. The water surface in the tank is 4m above the top of the opening. If the opening is closed by a plate which is held in place by 4 bolts placed at the corners, determine the force in each bolt.
b) Explain how the total force acting on submerged curved surface is determined.

3. a) Explain Lagrangian and Eulerian methods of describing fluid motion. Of these two methods, which one is widely used ? Why?
b) An airplane is observed to travel due north at a speed of 240kmph in a 80kmph wind from north-west. What is the apparent wind velocity observed by the pilot? What is apparent wind direction?

4. a) A pipe 250m long has a slope of 1 in 100 and tapers from 1.5m diameter at the higher end to 0.7m at the lower end. The quantity of water flowing is 700 lit / sec. If the pressure at the higher end is 60KPa, find the pressure at the lower end.
b) Mention any five practical applications of Bernoulli's theorem.

5. A straight pipe 30cm diameter, 6km long is laid between two reservoirs of surface elevation 170m and 120m. To increase the capacity of the line a 20cm diameter pipeline, 3km long is laid from the original line's mid point to the lower reservoir. What percentage increase in flow rate is gained by installing the new line? Take f = 0.02 for all pipes.

6. a) Differentiate between linear momentum and angular momentum and state angular momentum principle.
b) A stream function in 2-D flow is $\Psi = 2xy$. Show that the flow is irrotational and determine the corresponding velocity potential **Ø**.

7. a) Show that the velocity distribution in a viscous flow through a pipe resembles letter 'D'
b) Differentiate between hydrodynamically smooth and rough boundaries.

8. Explain the following :
i) Hydraulic grade line.
ii) Total energy line.
iii) Different non-dimensional numbers.
iv) Similitude and its types.

CODE No.:10BT30222 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2018

FOUNDATIONS OF ELECTRICAL ENGINEERING

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Define the terms: electric current, potential difference, e.m.f.
b) Derive an expression for star to delta transformation of balanced set of resistances.

2. a) Define the following terms referred to electrical network:
(i) Node (ii) Loop (iii) Branch (iv) Path
b) State and prove superposition theorem with the help of an example.

3. a) Define: i) form factor. ii) peak factor.
b) Derive the values of form factor and peak factor for a sinusoidally varying current waveform.

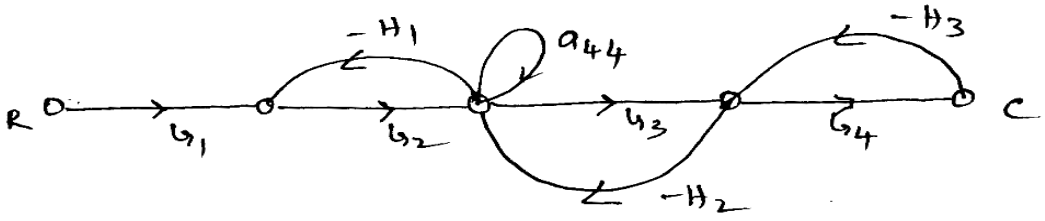
4. a) Derive the e.m.f equation of a DC generator.
b) What are the applications of DC series and DC shunt generator?

5. a) With neat sketch, explain the principle of operation of three phase induction motor.
b) A 1-Φ 50Hz transformer has primary voltage of 11kV and secondary voltage of 440V. If the max flux density is 1.2 wb/m^2 and the number of primary turns is 1400. Calculate
i) Number of secondary turns.
ii) Area of cross section of core.

6. a) Explain the classification of instruments.
b) Explain the construction and principles of operation of MI instruments.

7. a) Explain the classification of control systems.
b) Differentiate open loop and closed loop control systems.

8. a) Define various terms involved in the construction of signal flow graphs.
b) Determine the overall gain of the following signal flow graph.



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2018

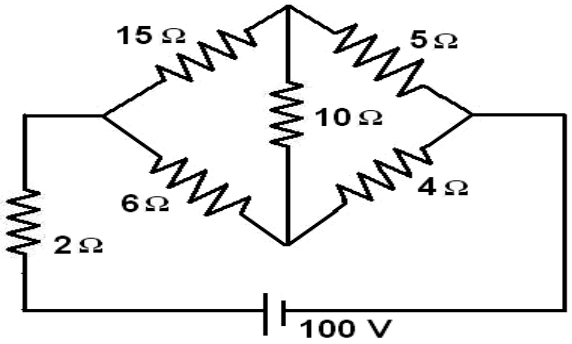
CIRCUIT THEORY

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

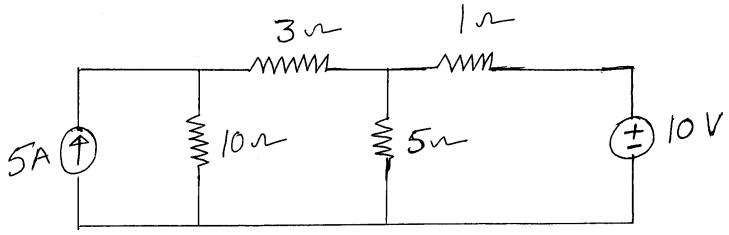
Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

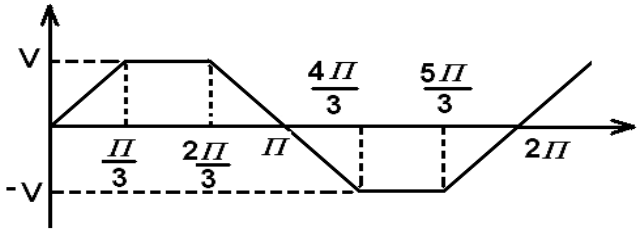
1. a) Obtain the expressions for star - delta equivalence of Resistive networks
b) Find the current through 10Ω resistor using Kirchhoff's laws for the following circuit.



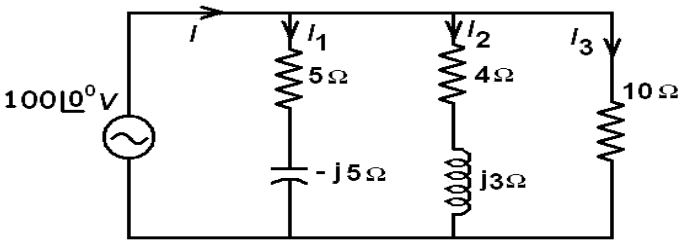
2. a) Explain the concept of Nodal and Mesh analysis
b) Write node voltage equations and determine the currents in each branch for the network shown below



3. a) A 120V, 60W lamp is to be operated on 220V, 50Hz supply mains. Calculate what value of (a) resistance (b) inductance, would be required that lamp glows on rated voltage. Which method is preferable and why?
b) Find the form factor and peak factor of the following wave form shown in figure.

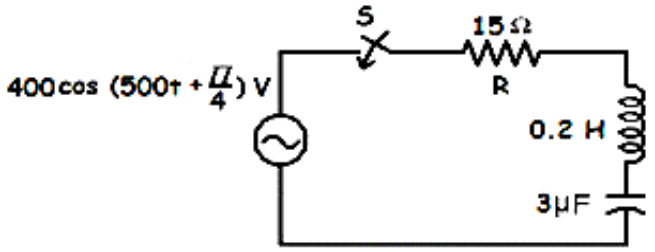


4. a) What is j operator and Explain its significance.
b) Find the branch currents, total current and the total power in the network shown below.



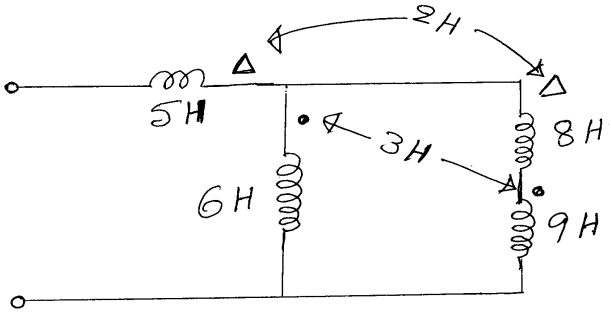
5. a) Find the expressions for i(t) for an R-C series circuit with sinusoidal excitation

b) In the circuit shown in figure, determine the complete solution for the current, when the switch is closed at t = 0, applied voltage is v (t) = 400 cos (500t + ∏/4). Resistance R = 15Ω, inductance L =0.2H and capacitance C = 3μF.



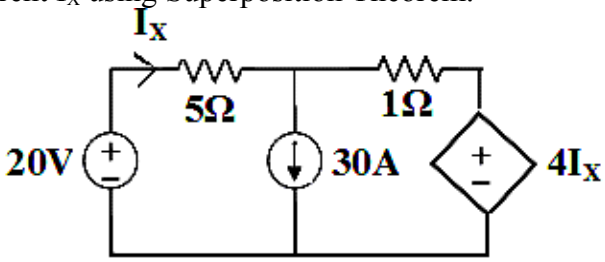
6. a) Derive an expression for equivalent inductance of two coupled coils connected in parallel.

b) Determine the equivalent inductance of inductive network with coupled coils shown below



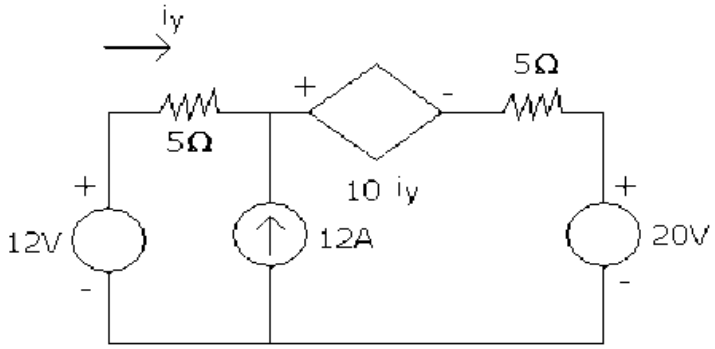
7. a) State and explain the Thevenin's theorem.

b) Find the current I_X using Superposition Theorem.



8. a) State and explain reciprocity theorem.

b) Calculate the current $\mathbf{i_y}$ in the network of figure using superposition theorem.



CODE No.:10BT30301 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC10) Supplementary Examinations October - 2018

STRENGTH OF MATERIALS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. An aluminium solid cylinder of 7.5cm diameter fits loosely inside a steel tube having 10cm external diameter and 8cm internal diameter. The steel tube is 0.02cm longer than aluminium cylinder and is 250cm long before the load is applied. Calculate the safe load which can be placed on a rigid flat plate on the top of the steel tube. Safe stress for steel is 95 MPa and for aluminium 65 MPa, $E_s = 210$ GPa, $E_{Al} = 70$ GPa.

2. The intensity of loading on a simply supported beam of 4m span, increases gradually from 500N at one end to 900N at the other end. Draw the shear force and bending moment diagrams.

3. A rectangular beam 200mm wide and 350mm deep is freely supported over a span of 4.8m and carries a load of 3.6 kN/m. It also carries three equal point loads W kN each, equi-spaced over the beam. If the permissible bending stress is 8MPa, find the maximum allowable value of W.

4. Determine the shear stress generated in a rectangular section of a beam which is subjected to a shear force F.

5. a) Derive an expression that governs the theory of pure torsion.
b) A hollow circular shaft of external diameter 50mm and wall thickness 5mm transmits a torque of 10kN-m. Find the maximum shear stress induced in the shaft.

6. A cantilever of 4m span length carries a load 40kN at its free end. If the deflection at the free end is not to exceed 8mm, what must be the moment of inertia of the cantilever section?

7. a) Derive an expression for increase in volume of a thin walled spherical vessel of diameter 'd' and thickness 't' subjected to an internal fluid pressure 'p'.
b) To what depth would a copper float of 25cm diameter and 0.3cm thick have to be sunk in water in order that the diameter is decreased by 0.003cm?
$E_c = 1E06$ kg/cm^2, $\nu = 0.27$, Weight of water = 1 gm/cm^3.

8. A steel tube of 200mm external diameter is to be shrunk on to another steel tube of 60mm internal diameter. After shrinking the diameter of the junction is 120mm. Find the hoop stresses developed in the tubes after shrinking on and the radial pressure at the junction.
Take $E = 2 \times 10^5$ N/mm^2.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2018

THERMODYNAMICS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Define heat and work. Write at least four differences between heat and work.
b) Air expands in a cylinder from 700kPa and 250^{0}C to 200kPa and 42^{0}C. Assuming ideal-gas behavior, calculate the work done on the face of the piston per kg of Air. Assume the pressure and volume are related by pv^n = constant, where n is a suitable exponent. Determine the value of the index n.

2. a) Define SFEE. How it reduces for the case of a heat exchanger?
b) Air at a pressure of 1 bar and 25^{0}C is heated at constant volume till the pressure is doubled. It is then expanded isothermally to the original pressure and cooled to the initial condition at constant pressure. Show the process on p-V and T-s diagrams and calculate the work and heat interactions during the processes.

3. a) Define and prove Carnot's theorem.
b) A heat engine receives half of its heat supply at 1000K and half at 500K, while rejecting heat to a sink at 300K. Calculate the maximum efficiency of the engine.

4. a) Why second law is called law of Degradation of energy? What is the available energy refereed to a cycle?
b) 2 Kg of water at 80^{0}C is adiabatically mixed with 3kg of water at 30^{0}C at a constant atmosphere of 1 bar. Find the increase in the entropy of the water due to the mixing process.

5. a) Why do the isobars on Mollier chart diverge from one another? Explain the importance of critical point.
b) A sample of steam from a boiler drum at 3Mpa is put through a throttling calorimeter in which the pressure and temperature are found to be as 0.1Mpa and 120^{0}C. Find the quality of the sample taken from the boiler?

6. a) Derive the equation for the change in heat transfer during the polytropic process.
b) 3 kg of air kept at an absolute pressure of 100Kpa and temperature of 300K is compressed polytropically until the pressure and temperature become 1500Kpa and 500K respectively. Evaluate the polytropic exponent, the final volume, the work of compression and heat interaction.

7. a) Explain briefly Dalton's law and Gibbs-Dalton law.
b) A mixture of hydrogen, H_2 and oxygen, O_2 is to be made so that the ratio of H_2 to O_2 is 2**:**1 by volume. If the pressure and temperature are 1**.**2 bar and 28 ^{0}C respectively, calculate: (i) The mass of O_2 required and (ii) The volume of the container.

8. a) Write short notes on: (i) Dry bulb temperature. (ii) Wet bulb temperature.
b) Air at 42^{0}C DBT and 28^{0}C WBT is to be cooled and dehumidification by passing it over a refrigerant filled coil to give a final condition of 16^{0}C and 90 % RH. Find the amounts of heat and moisture removed per kg of dry air.

CODE No.:10BT30401 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations October - 2018

SEMICONDUCTOR DEVICES AND CIRCUITS

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the process of breakdown of a p-n junction diode due to Avalnche effect and Zener effect.
b) Write a short notes on:
i) junction capacitance. ii) V-I characteristics of p-n diode.

2. a) Explain the circuit diagram of a single phase full-wave (center tapped) rectifier and sketch the input, output waveforms.
b) Derive the expression for the ripple factor of half wave rectifier and full wave rectifier.

3. a) Explain, how the Transistor acts as amplifier.
b) What are the differences between PN junction diode and Zener Diode?

4. a) Draw a circuit diagram of CE transistor amplifier using emitter biasing. Describe qualitatively the stability action of the circuit.
b) Design a voltage divider bias circuit so that Q-point is (6V, 2mA). Assume the transistor Parameters are: $\boldsymbol{\alpha = 0.985}$, I_{CBO} = 4μAmp and V_{BE} = 0.2 Volts.

5. a) Give the comparison of CE, CC and CB amplifiers with respect to voltage gain, current gain, input impedance and output impedance.
b) Find expressions for voltage gain, current gain, input impedance and output impedances of CC amplifier using simplified hybrid model.

6. a) Explain the structure and characteristics of Depletion MOSFET with a neat diagram.
b) What are the advantages of JFET?

7. a) Derive an expression for voltage gain, input impedance and output impedance of CD amplifier at low frequencies.
b) Discuss voltage divider biasing of JFET.

8. Explain about:
i) Schottly barrier diode.
ii) varactor diode and mention their applications.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2018

SIGNALS AND SYSTEMS

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Define and sketch the basic discrete time signals. State the conditions for a given function to be periodic.
b) Determine whether the function is periodic or not **A sin2t + B cosπ t**.

2. a) What is the half wave symmetry? Show that the Fourier series expansion of a periodic wave having half wave symmetry is void of even harmonics.
b) State the dirichilet conditions for Fourier series

3. a) Find Fourier Transform of the function $x(t) = e^{-3t}[u(t+2) - u(t-3)]$.
b) State and prove frequency and time shifting properties of Fourier Transform.

4. a) Differentiate between convolution and correlation of signals
b) Prove that power spectral density and auto correlation form Fourier transform pair.

5. Find Convolution of two pulses of equal amplitude and equal duration (both graphically and analytically).

6. a) State and Explain ROC property of Laplace Transform if x(t) is two sided
b) Find Laplace Transform of the signal $x(t) = e^{-b|t|}$

7. a) Explain why over sampling is restored to in certain applications. How does it help?
b) What is aliasing and anti aliasing? What are the causes to it and how it can be eliminated?

8. a) What is meant by ROC of Z-Transform? Explain its significance.
b) Determine Z-Transform of a signal **$x(n) = (2/3)^n u(n) + (-1/2)^n u(n)$** and Plot ROC and pole-Zero locations of X(z)

CODE No.:10BT30421 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations October - 2018

ELECTRONIC DEVICES AND CIRCUITS

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Clearly explain about V-I characteristics of P-N diode.
b) The voltage across a silicon diode at room temperature is 0.7Volts when 2mA current flows through it. If the voltage increases to 0.75Volts, Calculate the diode current.

2. a) Explain the circuit diagram of a single phase fullwave (center tapped) rectifier and sketch the input, output waveforms.
b) Derive the expression for the ripple factor of halfwave rectifier and fullwave rectifier.

3. a) Derive the relation between the BJT parameters α, β^* and γ.
b) Draw the circuit diagram of NPN junction transistor in CE configuration and describe its characteristics.

4. a) Explain diode compensation circuit for variations in I_C for a self bias circuit.
b) How self bias circuit will eliminate drawbacks in a fixed bias circuit.

5. Derive the expressions for voltage gain, current gain, I/P impedance and O/P impedance of CE amplifier using hybrid model.

6. a) With neat sketch explain the characteristics of MOSFET in enhancement mode.
b) Draw the circuit diagram of common source amplifier and derive equation for gain of the amplifier.

7. a) Write a short note on RC phase shift oscillator.
b) What are the advantages of negative feedback over positive feedback?

8. a) Explain about tunnel diode with energy band diagram.
b) Explain about SCR with neat sketches.

CODE No.:10BT30422 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2018

DIGITAL LOGIC DESIGN

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Convert the given Gray code number to equivalent binary 1001001011110010.
b) Convert $(A0F9.0EB)_{16}$ to decimal, binary, octal.

2. a) Simplify the following Boolean expressions using the Boolean theorems.
(i) **(A+B+C) (B'+C) + (A+D) (A'+C)** (ii) **(A+B) (A+B') (A'+B)**
b) Why a NAND and NOR gates are known as universal gates? Simulate all the logical operations using NAND and NOR gates.

3. a) What are SOP and POS forms of Boolean expression.
b) Simplify the Boolean expression using k-map
$f(A,B,C,D) = \pi (1,2,3,8,9,10,11,14) + \sum d (7,15)$.

4. a) Describe the operations performed by the following logic circuits with an example.
(i) Comparator (ii) Decoder (iii) Encoder
b) Explain the operation of a 3-to-8 decoder 74LS138. Realize 4-to-16 decoder using two 3-to-8 decoders.

5. a) Define excitation table. Explain D-flip flop and obtain the state equation, the state diagram, state table and excitation table of the same.
b) Explain the operation of a JK flip flop and give the advantages of JK flip flop.

6. a) Explain HDL for registers and counters.
b) With a neat sketch, explain the operation of 4-bit bidirectional shift register.

7. a) Explain RAM technology.
b) Implement $\mathbf{F_1 (a,b,c,d) = \sum m(0,1,2,3,6,9,11)}$ using PAL.

8. a) Explain the problems in asynchronous circuits.
b) Explain the methods to eliminate static hazards in asynchronous circuits.

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II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2018

DISCRETE MATHEMATICAL STRUCTURES

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Show that $((P \vee Q) \wedge \neg(\neg P \wedge (\neg Q \vee \neg R))) \vee (\neg P \wedge \neg Q) \vee (\neg P \wedge \neg R)$ is a tautology.
b) Obtain the principal disjunctive normal form of the formula $P \rightarrow (P \wedge (Q \rightarrow P))$.

2. a) What is the first order predicate calculus statement equivalent to the following?
"Every teacher is liked by the student".
b) Using propositional logic, prove the validity of the following argument:
$P \rightarrow (Q \rightarrow S), \wedge R \wedge P, Q \wedge R \rightarrow S$.

3. a) Suppose R and S are symmetric and reflexive relations on a set A. Is R∩S symmetric and reflexive. Justify your answer.
b) Show that the "greater than or equal "relation is a partial ordering on set of integers.

4. a) Show that the intersection of any two congruence relations on a set is also a congruence relation.
b) Show that the composition of two congruence relations on a set is not necessarily a congruence relation.

5. A group of 8 scientists is composed of 5 psychologists and sociologists:
i) In how many ways can a committee of 5 be formed?
ii) In how many ways can a committee of 5 be formed that has 3 psychologists and 2 sociologists?

6. a) Use generating functions to determine the number of different ways 10 identical balloons can be given to four children if each child receives at least two balloons.
b) Use generating functions to solve the recurrence relation $\mathbf{a_k = 5a_{k-1} - 6a_{k-2}}$ with initial conditions $\mathbf{a_0 = 6}$ and $\mathbf{a_1 = 30}$.

7. a) Explain graph coloring problem with an example.
b) Give an algorithm to find articulation point of a graph.

8. a) Explain Breadth first search and Depth first search algorithm for a spanning tree.
b) Explain Kruskal's algorithm for finding minimal spanning tree.

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CODE No.:10BT30502 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2018

DATA STRUCTURES

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain Merge Sort with suitable example. Write the 'C' implementation of it.
b) Explain about sequential search and give its implementation in 'C'.

2. What is a circularly linked list? Give an algorithm to (i) insert an element and (ii) delete an element from a circularly linked list.

3. a) Give the implementation of stack using linked list in 'C'.
b) Give the applications of stack.

4. Explain various Binary Search Tree operations.

5. What is an AVL tree? Explain about the different rotations in AVL trees for balancing with suitable example.

6. a) What is a B- tree? How do we define the height of it?
b) Write the procedure to search for an element of a B- Tree.

7. Give the algorithm for each of the following.
a) Minimum spanning tree.
b) Shortest path.

8. a) Explain the concept of Open Addressing hashing.
b) Perform the insertion operation for Open Addressing hashing with Quadratic Probing for the following list.
10, 54, 89, 18, 49, 65, 36, 97, 23 and 69.

CODE No.:10BT31001 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2018

THERMODYNAMICS AND FLUID MECHANICS

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. Define a thermodynamic system. Explain thermodynamic first law.

2. a) Derive an expression for the air standard efficiency of an otto cycle.
b) Differentiate between rotary and positive displacement compressors.

3. a) Distinguish between Carnot and Rankine cycles.
b) What are the different types of Calorimeters? Explain one of them with neat sketches.

4. a) What is COP?
b) Define (i) Ton of refrigeration (ii) Refrigeration effect
c) Enumerate the three modes by which heat can be transferred from one place to another. Which is the slowest of all?

5. a) Classify different types of fluid flows.
b) Describe the working of a Bourdon tube pressure gauge.

6. a) Differentiate between the Eulerian and Lagrangian methods of representing fluid flow.
b) Discuss flow measuring devices briefly.

7. What are the methods of dimensional analysis? Describe the Rayleigh's method for dimensional analysis

8. a) Explain the working principle of centrifugal and reciprocating pumps.
b) What is hydraulic turbine? Explain its classification.

CODE No.:14BT3BS01 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

MATRICES AND NUMERICAL METHODS

[Civil Engineering, Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Solve the system of equations: 7 Marks
$3x + 2y + z = 0$, $2x + 3z = 0$, $y + 3z = 0$, $x + 2y + 3z = 0$.

b) Find the eigen values and the corresponding eigen vectors of the matrix 7 Marks
$\begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & -2 \\ 2 & -2 & 1 \end{bmatrix}$.

(OR)

2 a) Find the inverse of the matrix A using elementary operations, where 7 Marks
$A = \begin{bmatrix} 1 & 1 & 3 \\ 1 & 3 & -3 \\ -2 & -4 & -4 \end{bmatrix}$.

b) 7 Marks
State Cayley - Hamilton theorem and using it find A4, if $A = \begin{bmatrix} 1 & 0 & 3 \\ 2 & 1 & -1 \\ 1 & -1 & -1 \end{bmatrix}$.

UNIT-II

3 a) Using Lagrange's interpolation formula find the value of 'y' when x = 10 if the following values of x and y are given. 7 Marks

x :	5	6	9	11
y :	12	13	14	16

b) Evaluate $\sqrt{24}$ to four decimal places using Newton – Raphson method. 7 Marks

(OR)

4 a) The following table gives corresponding values of x and y. Construct the difference table and then express y as a function of x. 7 Marks

x :	0	1	2	3	4
y :	3	6	11	18	27

b) By the method of least squares, fit a parabola $y = a + bx + cx^2$ to the following data. 7 Marks

x :	2	4	6	8	10
y :	3.07	12.85	31.47	57.38	91.29

UNIT-III

5 a) Solve dy/dx= 4-2x, y(0)=2 with h=0.5 in two steps using modified Euler method. 7 Marks

b) A rod is rotating in a plane. The following table gives the angle θ(radians) through which the rod has turned for various values of time t seconds. 7 Marks

t	0	0.2	0.4	0.6
θ	0	0.12	0.49	1.12

Calculate the angular acceleration of the rod when t=0.6 seconds.

(OR)

6 a) Evaluate $\int_0^z e^{-x^z}$ dx using Simpson's 1/3 rule taking h= 0.25. 7 Marks

b) Using Modified Euler's method, determine y(0.04) taking h = 0.02 given that $x^2 + y$, $y(0) = 1$. 7 Marks

UNIT-IV

7 a) Obtain the Fourier series for f(x) = π x, in 0≤ x ≤ 2. 7 Marks

b) Find the Fourier sine transform of $\frac{x}{a^2 + x^2}, x \geq 0$. 7 Marks

(OR)

8 a) Express f(x) = cos x, 0<x<π in half range sine series. 7 Marks

b) Express the function $f(x) = \begin{cases} 1 & for \ |x| \leq 1 \\ 0 & for \ |x| > 1 \end{cases}$ as a Fourier integral, hence evaluate $\int_0^\infty \frac{\sin\lambda \cos\lambda x}{\lambda} d\lambda$. 7 Marks

UNIT-V

9 a) Form the partial differential equation by eliminating arbitrary constants from $2z = \frac{x^z}{a^z} + \frac{y^z}{b^z}\frac{x^z}{a^z}$. 7 Marks

b) A tightly stretched string of length ℓ with fixed ends is initially in equilibrium position. It is set to vibration by giving each point a velocity k $\sin^3 \pi x/\ell$. Find the displacement $y(x, t)$ at any point 'x' and at any time 't'. 7 Marks

(OR)

10 a) Form the partial differential equation by eliminating the arbitrary functions f_1 and f_2 from $z = x f_1(x + t) + f_2(x + t)$. 4 Marks

b) A tightly stretched string with fixed end points $x = 0$ and $x = 1$ is initially in a position given by $y = y_0 \sin^3(\pi x)$. If it is released from rest from this position, find the displacement $y(x, t)$, using variable separable method. 10 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

SPECIAL FUNCTIONS AND COMPLEX ANALYSIS

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Define Beta and Gamma functions and derive the relation between them. 7 Marks

b) Show that $\frac{d}{dx}\left[x^n J_n(x)\right] = x^n J_{n-1}(x)$. 7 Marks

(OR)

2 a) Evaluate $\int_0^2 x(8-x^3)^{\frac{1}{3}}$ dx using Beta and Gamma functions. 7 Marks

b) Show that $\left[J_{\frac{1}{2}}(x)\right] + \left[J_{-\frac{1}{2}}(x)\right]^2 = \frac{2}{\Pi x}$. 7 Marks

UNIT-II

3 a) Show that an analytic function of constant modulus is constant. 7 Marks

b) Determine the analytic function $f(z) = u + iv$ given that $3u + 2v = y^2 - x^2 + 16x$. 7 Marks

(OR)

4 a) It $U-V = (x-y)(x^2+4xy+y^2)$ and $f(z) = U + IV$ is analytic function of $z = x + iy$. Find f(z)in terms of z. 7 Marks

b) Determine the analytic function whose real part is $x^3 - 3xy^2 + 3x^2 - 3y^2 + 1$. 7 Marks

UNIT-III

5 a) Evaluate $\int_0^{1+i} (x^2 - iy)$ dz along the path (i) y=x (ii) $y = x^2$. 7 Marks

b) Evaluate $\oint_c \frac{\cos \pi z^2}{(z-1)(z-2)}$ dz where c is the circle |z|=3 using Cauchy's integral Formula. 7 Marks

(OR)

6 a) Evaluate $\oint_c \frac{\sin \pi z^2 + \cos \pi z^2}{(z-1)(z-2)}$ dz where C is the circle |z| = 4. 7 Marks

b) Expand $\frac{1}{z^2 - 3z + 2}$ in the region (i) |z| < 1, (ii) | z|> 2 (iii) 1<|z|<2 using Taylor's series. 7 Marks

UNIT-IV

7 a) Determine the poles and corresponding residues for the function $f(z) = \frac{z^2 - 2z}{(z+1)^2(z^2+4)}$. 7 Marks

b) By the method of residues evaluate $\int_0^{2\pi} \frac{d\theta}{5 - 3\cos\theta}$. 7 Marks

(OR)

8 a) Calculate the value of $\oint_c \frac{z-3}{z^2+2z+5}\,dz$ where c is circle |z+ l-i |=2. 7 Marks

b) Evaluate $\int_{-\infty}^{\infty} \frac{dx}{x^4+1}$. 7 Marks

UNIT-V

9 a) Under the Transformation $W = \frac{1}{z}$ find the image of |z-2il=2. 7 Marks

b) Find the Bilinear Transformation which maps the points z = 1, i - 1 in to the points w =i 0 – i. 7 Marks

(OR)

10 a) Find the image of the following curve under the mapping w = 1/z. 7 Marks

b) Discuss the Transformation $w = e^z$. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

PROBABILITY AND STATISTICS

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) State and prove the Baye's theorem. 7 Marks

b) In a class 2% of boys and 3% of girls are having blue eyes. There are 30% girls in the class. If a student is selected and found that having blue eyes, what is the probability that the student is a girl. 7 Marks

(OR)

2 a) Define random variable, probability mass function, probability density function and mathematical expectation for continuous random variable. 7 Marks

b) Find the expectation of a number (1 or 2 or 3 or 4 or 5 or 6), when a die is thrown. 7 Marks

UNIT-II

3 a) Five coins are tossed 96 times; find the probability of getting 5 heads 3 times. 7 Marks

b) Explain all normal curve properties with graphs. 7 Marks

(OR)

4 a) Derive the mean and variance of normal distribution. 7 Marks

b) If x is a Poisson variable such that $p(x = 1) = 24\ p(x = 3)$, find the probability $p(x=0)$. 7 Marks

UNIT-III

5 a) The following data shows the values of sample mean $\left(\bar{x}\right)$ and Range (R) for 10 samples for 6 each. Calculate the value for central live and the control limits for mean – chart and range – chart sketch the control charts and comment on state of control. 7 Marks

Sample No	1	2	3	4	5	6	7	8	9	10
Mean (x)	43	49	37	44	45	37	51	46	43	47
Rang (R)	5	6	5	7	7	4	8	6	4	6

b) Give the geometrical inter predation of correlation co-efficient between the limits -1 and +1. 7 Marks

(OR)

6 a) Find the correction co-efficient between x and y. 7 Marks

x	21	17	15	13	12	10
y	15	14	13	11	10	9

b) If two regression co-efficient are 0.8 and 0.2, what would be the value of co-efficient of correlation. 7 Marks

UNIT-IV

7 a) Define the following. 8 Marks

i) population and samples.
ii) parameters and statistics.
iii) critical region.
iv) degrees of freedom.

b) The mean of two large samples of sizes 1000 and 2000 members are 67.5 inches and 68 inches respectively. Can the samples be rewarded as drawn from the same population of standard deviation 2.5 inches? 6 Marks

(OR)

8 a) In two large populations, there are 30% and 25% respectively of fair hired People. Is this difference likely to be hidden in samples of 1200 and 900 respectively from the two populations? 7 Marks

b) A coin was tossed 960 times and returned heads 183 times. Test the hypotheses that the coin is unbiased at 0.05 level of significance. 7 Marks

UNIT-V

9 a) The following tables give the number of aircraft accident that occurred during seven days of the week. Find whether the accidents are uniformly distributed over the week. 7 Marks

Days	Mon	Tue	Wed	Thu	Fri	Sat
No.of accidents	14	18	12	11	15	14

b) Explain briefly significance between F-Test and t- test 7 Marks

(OR)

10 a) A random samples of 10 bags of pesticides are taken whose weights are 50, 49, 52, 44, 45, 48, 46, 45, 49 45 (in Kgs). Test whether the average packing can be taken to be 50 kgs. 7 Marks

b) Two independent samples of 8 and 7 items respectively had the following values of the variable 7 Marks

Sample – I	9	11	13	11	16	10	12	14
Sample –II	11	13	11	14	10	8	10	-

Do the estimates of population variances differ significantly?

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

MECHANICS OF SOLIDS

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Derive an expression for the elongation of a axially loaded bar for the following conditions: 14 Marks

i) Tapering bar having diameter D_1 at one end and D_2 at the other end.
ii) Rectangular tapering bar having depth D_1 at one end and D_2 at the other end with constant width B.

(OR)

2 Derive expression for the elongation of the following bars under its own weight. Density of the material is γ. 14 Marks

i) Prismatic bar.
ii) Conical bar fixed at base.

UNIT-II

3 A Simply supported beam 6m span carries udl of 20kN/m for left half of span and two point loads of 25kN and 35kN at 4m and 5m from left support. Find maximum SF and BM and their location drawing SF and BM diagrams. 14 Marks

(OR)

4 What is point of contraflexure? Locate the same for an overhanging beam of simply supported span of 10m, with two sides overhanging portions of 2.5m each, subjected to a UDL of 3kN/m and end concentrated loads of 5kN. Draw the BMD and SFD. 14 Marks

UNIT-III

5 A beam of size 150mm wide, 250mm deep carries a uniformly distributed load of w kN/m over entire span of 4m. A concentrated load 1kN is acting at a distance of 1.2m from the left support. If the bending stress at a section 1.8m from the left support is not to exceed 3.25N/mm², find the load w. 14 Marks

(OR)

6 A Simply supported beam of length 6 metres carries a **udl** of 20kN/m throughout its length and a point of 30kN at 2 metres from the right support. Draw the shear force and bending moment diagram. Also find the position and magnitude of maximum bending moment. 14 Marks

UNIT-IV

7 Derive expressions for the following of a closely coiled helical spring subjected to axial load W. Determine: 14 Marks

i) The deflection of spring.
ii) Maximum shear stress in wire.
iii) Stiffness of the spring.

(OR)

8 A shaft is to transmit a power of 100MW rotating at 200RPM. Design the inner and outer diameter of the shaft if the diameters ratio is 0.6 and the allowable shear stress is limited to 60MPa. Also determine the angle of twist per unit length if the rigidity modulus of the material of shaft is 80GPa. 14 Marks

UNIT-V

9 A hollow cylindrical cast iron column of 150mm external diameter and 15mm thickness, 3.6m length is hinged at one end and fixed at the other. 14 Marks

Find: i) the ratio of Euler's and Rankine's loads.
ii) the length for which the critical load by Euler's and Rankine's formula will be equal.

Take $E = 8.4 \times 10^4 N/mm^2$, $f_c = 525N/mm^2$ and $\alpha = 1/1600$.

(OR)

10 Derive an expression for the shrink fit of a compound cylinder. 14 Marks

CODE No.:14BT30103 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

BUILDING MATERIALS AND CONCRETE TECHNOLOGY

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Briefly explain the processes involved in manufacture of bricks in order.	7 Marks
	b)	Describe four common defects in timber.	7 Marks
		(OR)	
2	a)	Describe briefly the qualities of a good building stone preservative.	7 Marks
	b)	Discuss the factors affecting the strength of timber.	7 Marks

UNIT-II

3	a)	Distinguish between Fat lime and Hydraulic Lime.	7 Marks
	b)	Explain any one method of Manufacturing Lime.	7 Marks
		(OR)	
4	a)	What is building lime and why is it important and used in building construction?	7 Marks
	b)	Describe the qualities and uses of (i) Aluminum, (ii) Rubber.	7 Marks

UNIT-III

5	a)	What are the various ingredients of cement concrete?	7 Marks
	b)	Explain the importance of workability in concrete construction. What is meant by segregation and bleeding?	7 Marks
		(OR)	
6		Explain any two laboratory methods to measure workability with the help of neat sketches.	14 Marks

UNIT-IV

7		Explain the Schmidts Rebound Hammer test with the help of neat sketch.	14 Marks
		(OR)	
8		Explain the various techniques of measuring Pulse velocity through Concrete with the help of neat sketches.	14 Marks

UNIT-V

9		Define Modulus of Elasticity and explain how Modulus of Elasticity is determined in the laboratory.	14 Marks
		(OR)	

10 Design a M25 Concrete mix using I.S. method of Mix Proportioning for the following data: 14 Marks

i) Maximum size of aggregate	-	20mm (Angular)
ii) Degree of workability	-	0.85 compaction factor
iii) Quality Control	-	Average
iv) Type of Exposure	-	moderate
v) Specific Gravity		
a) Cement	-	3.12
b) Sand	-	2.65
c) Coarse aggregate	-	2.68
vi) Water absorption:		
a) Coarse aggregate	-	1.0%
b) Fine aggregate	-	1.8%
vii) Free surface moisture:		
a) Coarse aggregate	-	Nil
b) Fine aggregate	-	2.0%

viii) Sand confirms to Zone II grading.
Assume any other data required suitably

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

ELECTROMAGNETIC FIELDS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Derive the expression for Electric Field Intensity (EFI) due to surface charge distribution.	7 Marks
	b)	Write and explain Maxwell's first equation in integral form.	7 Marks
		(OR)	
2	a)	Derive the expression for EFI due to volume charge distribution.	7 Marks
	b)	Derive the expression for Capacitance of a spherical Capacitor.	7 Marks

UNIT-II

3	a)	Derive the expression for Electric Field Inside a Dielectric Material.	7 Marks
	b)	What is Polarization? Explain about different types of polarization in detail.	7 Marks
		(OR)	
4	a)	Explain about the classification of dielectric materials. How dipolar are formed in a dielectric material?	7 Marks
	b)	Determine the capacitance of two concentric spherical conductors. Assume suitable data.	7 Marks

UNIT-III

5	a)	State and explain Ampere's circuital law in integral and differential forms.	7 Marks
	b)	Explain the concept of magnetic dipole and dipole moment.	7 Marks
		(OR)	
6	a)	State and prove Stoke's Theorem.	7 Marks
	b)	Given magnetic field intensity H = 4ax + 2ay - 3az A/m at a point in free space. Find the magnetic flux density.	7 Marks

UNIT-IV

7	a)	Explain the classification of magnetic materials.	7 Marks
	b)	Derive the expression for magnetic energy density in a magnetic field.	7 Marks
		(OR)	
8	a)	What is the difference between solenoid and toroid? Determine the self inductance of solenoid.	7 Marks
	b)	Differentiate between self and mutual inductance. Derive the expression for magnetic energy density.	7 Marks

UNIT-V

9	a)	Explain the difference between induced, transformer and motional EMF.	7 Marks
	b)	Write the point form of Maxwell's equations. Explain their significance.	7 Marks
		(OR)	
10	a)	Explain about the transformer EMF and also derive the expression.	7 Marks
	b)	State and prove Poynting theorem.	7 Marks

CODE No.:14BT30202 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

DC MACHINES

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss the principle of operation of DC machine as a motor and as a generator.	7 Marks
	b)	Derive the expression of emf generated in case of generator from the first principles.	7 Marks

(OR)

2	a)	Derive an expression for magnetic stored energy in a singly excited system with the help of a neat diagram.	7 Marks
	b)	List out examples of singly excited and multiple excited electrical machines.	7 Marks

UNIT-II

3	a)	Explain about different excitation methods of DC generators.	7 Marks
	b)	Explain about demagnetizing AT/pole and cross magnetizing AT/pole in DC generators.	7 Marks

(OR)

4		Briefly discuss about the armature reaction and its effects on the operation of DC machines. How the armature reaction is minimized?	14 Marks

UNIT-III

5	a)	Explain the working of equalizer bar in parallel operation of DC series generator.	7 Marks
	b)	What are the factors which will affect the voltage build up in self excited DC generators?	7 Marks

(OR)

6	a)	Explain how two shunt generators work in parallel and how they share the load.	7 Marks
	b)	Two shunt generators operating in parallel deliver a total current of 250A. One of the generators is rated 50KW and the other 100KW. The voltage rating of both machines is 500V and have a regulation of 6% (smaller one) and 4%. Assuming linear characteristics, determine i) the current delivered by each machine ii) terminal voltage.	7 Marks

UNIT-IV

7	a)	Derive the torque equation in a DC motor. Explain.	7 Marks
	b)	Determine developed torque and shaft torque of 220V, 4 pole series motor with 800 conductors wave connected supplying a load of 8.2KW by taking 45A from the mains. The flux per pole is 25mWb and its armature circuit resistance is 0.6Ω.	7 Marks

(OR)

8	a)	Explain the meant by back emf. Is the back emf greater or lesser than applied voltage? Why? Explain the significant of back EMF in DC motor.	7 Marks
	b)	A DC series motor operates at 800 r.p.m with a line current of 100A from 230V mains. Its armature circuit resistance is 0.15Ω and its field resistance 0.1Ω. Find the speed at which the motor runs at a line current of 25A, assuming that the flux at this current is 45% of the flux at 100 A.	7 Marks

UNIT-V

9 a) Discuss how to conduct retardation test. Explain how the test results are obtained. 7 Marks

b) In a retardation test on a dc motor, with its field normally excited, the speed fell from 1525 to 1475 r.p.m in 25 seconds. With an average load of 1.0KW supplied by the armature, the same speed drop occurred in 20 seconds. Find out the moment of inertia of the rotating parts in kg.m^2. 7 Marks

(OR)

10 a) Discuss, what is the experimental setup for the separation of losses and explain it. 7 Marks

b) How the performance of two identical dc shunt machines could be determined by utilizing minimum amount of power from supply. The two machines are mechanically coupled. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

ELECTRIC CIRCUITS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) State and explain Kirchhoff's laws. 6 Marks

b) Find the current delivered by the source for the network shown in Fig.1 using network reduction technique. 8 Marks

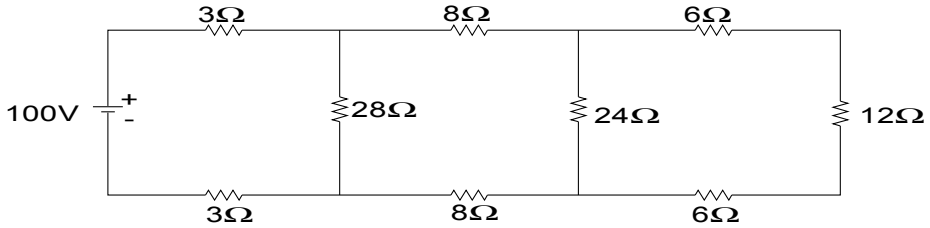

Fig.1

(OR)

2 a) Determine the equivalent resistance between the terminals A and B for the network shown in fig. 2. 7 Marks

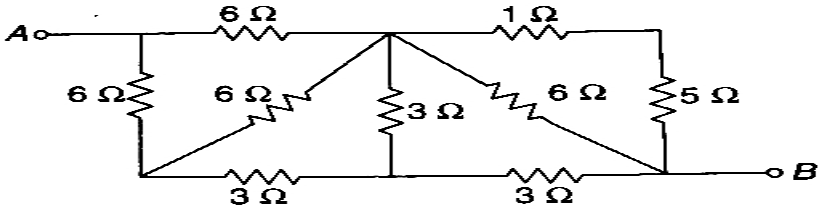

Fig. 2

b) List the steps involved in constructing the dual of a network. 7 Marks

UNIT-II

3 a) Derive the resonant frequency of parallel combination of series RC and RL circuits. 8 Marks

b) Distinguish between series and parallel Resonance. 6 Marks

(OR)

4 a) A series RL has R= 35Ω and L= 0.98 H. It is connected in paralle to a capacitor of 250μ F and the combination is connected across 220V, 50 Hz supply. Find the (i) current in each element, (ii) voltage across each element and (iii) power factor and also draw the phasor diagram showing the total current. 7 Marks

b) Derive an expression of resonance frequency of parallel RC and RL circuit. 7 Marks

UNIT-III

5 a) A symmetrical three phase 100V ; three wire supply feeds an unbalanced star connected load with impedances of the load Z_RZ_R = 3+j4Ω, Z_YZ_Y =2-j6Ω and Z_BZ_B =4-j0Ω. Find (i)line currents (ii)voltage across the impedances and (iii)the displacement neutral voltage. 8 Marks

b) The input power to a three phase load is 10kW at 0.8 pf. Two watt meters are connected to measure the power, find the individual readings of the watt meters. 6 Marks

(OR)

6 a) Obtain the relationship between line and phase voltages and currents in a three phase balanced star connection. 6 Marks

b) A 3-phase induction motor 100 kVA at 0.6 pf lag from a 440V 3-phase 50Hz (balanced). There is another load on the same line and load is connected in the form of a ΔΔ having 9 Ω resistance and -j54Ω reactance in series in each phase. Find (i) the total VA power (ii) average power, reactive power, line current and the power factor of the combination. 8 Marks

UNIT-IV

7 Derive the expression for equivalent inductance when two coils with self inductances L1, L2 and mutual inductance M are connected in parallel with cumulative coupling. 14 Marks

(OR)

8 a) Determine the equivalent inductance of the network shown in Fig. 3. 7 Marks

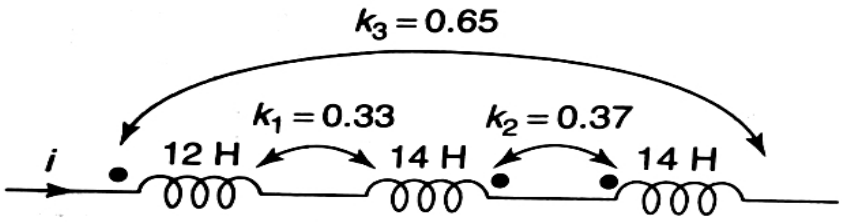

Fig. 3

b) Derive the expression for coefficient of coupling between two coils having magnetic coupling. 7 Marks

UNIT-V

9 Find the current in 2Ω resistor using thevenin's theorem in Fig.4 and verify the result by norton's theorem. 14 Marks

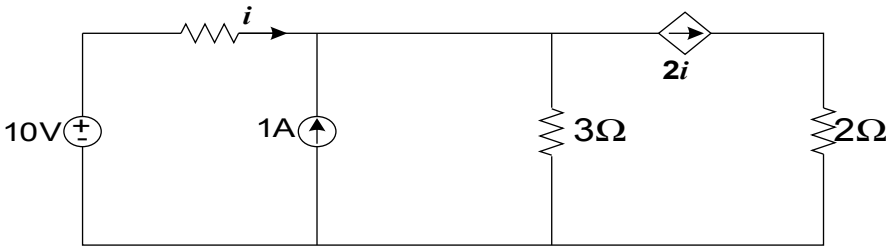

Fig.4

(OR)

10 Determine the thevenin's equivalent network for the network shown in Fig.5. 14 Marks

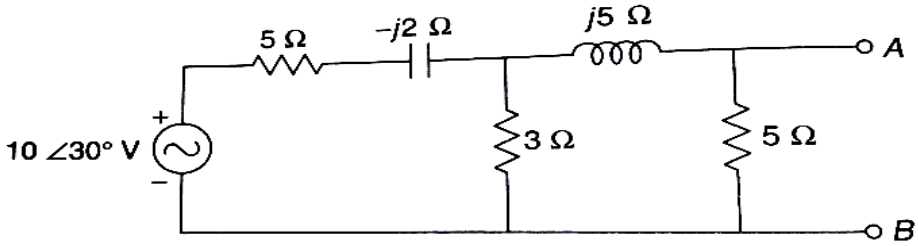

Fig. 5

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

ELECTRICAL TECHNOLOGY

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the working principle of a DC generator.	6 Marks
	b)	Explain, how to obtain the open circuit characteristic of a separately excited DC generator.	8 Marks
		(OR)	
2	a)	Derive the torque equation of a DC motor.	7 Marks
	b)	A shunt motor operating on 230V takes 1a=6A at no load and runs at 1200 r.p.m. Take R_a = 0.25Ω, find the speed and electromagnetic torque when the armature takes 36A with the same flux.	7 Marks

UNIT-II

3	a)	Derive the EMF equation of a single phase transformer.	7 Marks
	b)	Explain the working principle of a single phase transformer.	7 Marks
		(OR)	
4		Explain, how to conduct OC and SC tests on a single phase transformer. Also explain, how to find out the Efficiency and Regulation of a single phase transformer from OC and SC tests.	14 Marks

UNIT-III

5	a)	Derive the relation between phase and line quantities in three phase star connection.	8 Marks
	b)	Derive the expression for power in a three phase circuit.	6 Marks
		(OR)	
6		Explain, how to measure the power in a three phase circuit using Two Wattmeter method with the necessary derivation.	14 Marks

UNIT-IV

7	a)	Describe the principle and operation of 3-φ induction motor.	7 Marks
	b)	Derive an EMF equation of an alternator.	7 Marks
		(OR)	
8	a)	Explain the effects of slip on rotor circuit of three phase induction motor.	7 Marks
	b)	Derive the condition for maximum torque of three phase induction motor.	7 Marks

UNIT-V

9		Explain the construction and the principle of operation of universal motor. Also give the applications of this motor.	14 Marks
		(OR)	
10	a)	Explain the principle of operation of split phase induction motor.	7 Marks
	b)	Explain the principle of operation of capacitor induction motor.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

NETWORK ANALYSIS

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain about series and parallel inductive and capacitive circuit.	8 Marks
	b)	The filament of a light in the circuit has a certain amount of resistance. The bulb operates with 120V and 0.8A of current, what is the resistance of its filament?	6 Marks

(OR)

2	a)	Derive the expressions of equivalent resistances of star network for the equivalent Delta network.	7 Marks
	b)	A bridge network ABCD is arranged as follows: Resistance between terminals AB, BC, CD, DA and BD are 10Ω, 30Ω, 15Ω, 20Ω and 40Ω respectively. A 4V battery is connected with negligible internal resistance between terminals A and C. Determine the current through each element in the network using network reduction techniques.	7 Marks

UNIT-II

3	a)	Define the following terms with respect to fundamental sinusoidal a.c quantity. i) Average value. ii) RMS value. iii) Form factor. v) Peak factor.	8 Marks
	b)	The Q factor of a RLC circuit is 5 at its resonance frequency of 1kHz. Assuming the power dissipation of 250W when the current drawn is 1A, find the circuit parameters and band width of the circuit.	6 Marks

(OR)

4	a)	Define resonance and list out its implications.	6 Marks
	b)	What is locus diagram? Draw and explain current locus diagram for a series RL circuit, with fixed resistance by deriving necessary expressions.	8 Marks

UNIT-III

5	a)	Derive the expressions of Transient response of RL parallel circuit with DC excitation.	7 Marks
	b)	Determine the voltage at the terminals of a coil having R=10Ω and L =15mH at the instant when the current is 10A and increasing at the rate of 5A/sec. Also find the stored energy in the inductor.	7 Marks

(OR)

6		Explain and derive the expressions of Transient response of RLC series circuit with sinusoidal excitation.	14 Marks

UNIT-IV

7	a)	Derive the relations ofh- parameters interms of Y-parameters.	7 Marks
	b)	Explain about m-derived filter.	7 Marks

(OR)

8		Explain the design considerations of proto type low pass filter with necessary characteristics.	14 Marks

UNIT-V

9 a) State and explain compensation theorem with a suitable example. 7 Marks

b) Find the voltage across 2Ω resistor in Fig.1 using super position theorem. 7 Marks

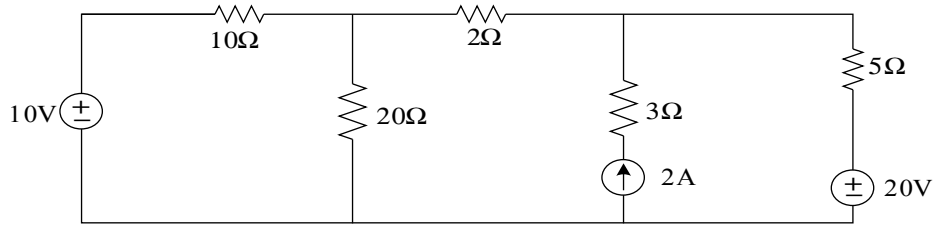

Fig. 1

(OR)

10 Obtain the thevenin equivalent for the bridge circuit shown in Fig.2. 14 Marks

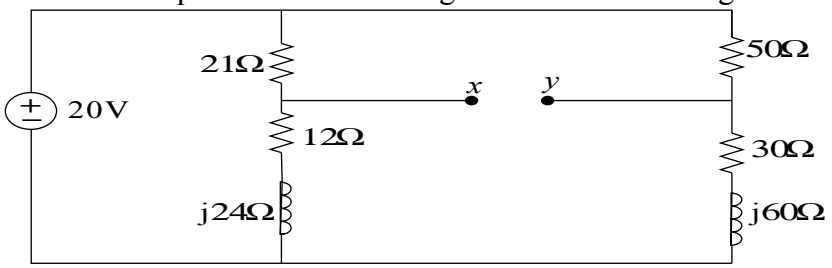

Fig.2.

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II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

BASICS OF ELECTRICAL AND MECHANICAL TECHNOLOGY

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

PART-A

UNIT-I

1	a)	Explain in detail active elements.	7 Marks
	b)	Write short notes on Cleat wiring.	7 Marks
		(OR)	
2	a)	Explain in detail passive elements.	7 Marks
	b)	Explain the general rules related to wiring.	7 Marks

UNIT-II

3	a)	List out types of earthing and explain rid earthing in detail.	7 Marks
	b)	Explain the principle of operation of a transformer.	7 Marks
		(OR)	
4	a)	Discuss about pipe earthing with neat diagram.	7 Marks
	b)	Explain the principle of operation of an alternator.	7 Marks

PART-B

UNIT-III

5	a)	Sketch and describe the working of Gas Welding.	7 Marks
	b)	Explain Brazing and list the applications of Brazing.	7 Marks
		(OR)	
6	a)	Explain the working principle of Two stroke engines with neat sketches.	7 Marks
	b)	List out the comparisons between Two Stroke and Four Stroke engines.	7 Marks

UNIT-IV

7	a)	List the properties of an ideal refrigerant.	7 Marks
	b)	With a neat sketch, explain the working of Vapour absorption refrigeration system.	7 Marks
		(OR)	
8	a)	List out the important components require for an air conditioning system. Also draw the schematic diagram for basic air conditioning system.	7 Marks
	b)	Explain the Year round Air-Conditioning system with a neat sketch.	7 Marks

UNIT-V

9	a)	Explain the working principle of single stage reciprocating air compressor.	7 Marks
	b)	Explain the need of various earth moving equipments with neat sketches.	7 Marks
		(OR)	
10	a)	Explain the working principle of Multi stage compressor with neat sketch.	7 Marks
	b)	Write short notes on the following: i) Excavators. ii) Power shovels.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Derive the expressions for energy stored in an inductor and capacitor.	6 Marks
	b)	Briefly explain about active and passive elements, lumped and distributed elements.	8 Marks

(OR)

2	a)	Three equal resistances are available. Derive the ratio of the equivalent resistances when they are connected in parallel and also the ratio of the current through each element when they are connected in parallel.	8 Marks
	b)	A resistor of 50Ω has a potential difference of 100V across it for 1 hour. Calculate power and energy consumed by resistor.	6 Marks

UNIT-II

3	a)	Define the following. i) Active Power. ii) Reactive Power. iii) Form factor. iv) Power factor.	8 Marks
	b)	Determine the sinusoidal response of parallel RL circuit.	6 Marks

(OR)

4	a)	An impedance of (10+ j15)Ω is connected in parallel with an impedance of (6-j8)Ω. The total current is 20 A. Calculate the power from the supply.	7 Marks
	b)	A coil of resistance 15Ω and inductance 0.6H is connected in parallel with a non-inductive resistor of 20Ω. Find the following i) The current in each branch. ii) The total current supplied. iii) The power factor of the whole circuit. Take the applied voltage as 200V, 50Hz.	7 Marks

UNIT-III

5	a)	Explain the basic principle of DC motor.	7 Marks
	b)	Derive the expression for **emf** generated in a DC generator.	7 Marks

(OR)

6	a)	List out and briefly explain the characteristics of DC motor.	8 Marks
	b)	An 8- pole lap wound generator armature has 960 conductors, a flux of 40mWb and a speed of 400 r.p.m. Calculate the **emf** generated on open circuit. If the same armature is wave wound, at what speed must it be driven to generate 400V.	6 Marks

UNIT-IV

7	a)	Explain the construction and working principle of dynamometer type wattmeter.	8 Marks
	b)	List out the functions of digital multi-meter.	6 Marks

(OR)

8	a)	Briefly explain about rectifier type instrument with neat diagram.	7 Marks
	b)	Briefly explain about electronic voltmeters and ammeters.	7 Marks

UNIT-V

9	a)	Define and explain forward current, peak inverse voltage and reverse current in a P-N junction diode.	7 Marks
	b)	What is a rectifier? Explain the operation of half wave rectifier.	7 Marks
		(OR)	
10	a)	Explain the construction and operation of NPN transistor.	7 Marks
	b)	Briefly explain how a transistor acts as an amplifier.	7 Marks

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II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

BASIC ELECTRICAL ENGINEERING

[Computer Science and Engineering, Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are different types of electrical network elements? Explain.	7 Marks
	b)	Define and explain Kirchhoff's laws.	7 Marks
		(OR)	
2	a)	Derive the expression for Equivalent inductance 'L_{eq} ' when three inductances L_1, L_2, L_3 are connected in Parallel.	8 Marks
	b)	What is the symbolic representation of ideal independent DC voltage source? Also draw its v-i characteristics.	6 Marks

UNIT-II

3	a)	Define and explain *Active Power, Reactive Power* and *Apparent Power*.	6 Marks
	b)	A coil having a resistance of 7Ω and an inductance of 31.8mH is connected to 230V, 50Hz supply. Calculate (i) the circuit current (ii) phase angle (iii) power factor (iv) power consumed.	8 Marks
		(OR)	
4		How generation of three phase AC voltage takes place? With appropriate circuit diagram and equations, explain it clearly.	14 Marks

UNIT-III

5	a)	List different types of DC generators. Also mention their applications.	7 Marks
	b)	Derive from first principles an expression for the EMF induced in a DC generator.	7 Marks
		(OR)	
6	a)	Explain the principle of working of a DC motor.	6 Marks
	b)	A 4-pole, lap wound 750 r.p.m DC shunt generator has an armature resistance of 0.4Ω and field resistance of 200Ω. The armature has 720 conductors and the flux per pole is 30m Wb. If the load resistance is 15Ω, determine the terminal voltage.	8 Marks

UNIT-IV

7	a)	What is the principle of Operation of Transformer.	6 Marks
	b)	What is meant by Voltage regulation of a transformer? Derive the expression for per unit voltage regulation.	8 Marks
		(OR)	
8	a)	Discuss about the constructional details of Cage rotor Induction motor with neat diagram.	8 Marks
	b)	Explain the principle of operation of Stepper motor.	6 Marks

UNIT-V

9	a)	What is the function of voltage stabilizer? Also explain its operation.	8 Marks
	b)	Give the comparison between Digital multi meter and Analog Multi meter.	6 Marks
		(OR)	
10	a)	Compare between moving coil and moving iron instruments.	7 Marks
	b)	What is UPS? Discuss its operation and applications.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

FOUNDATIONS OF ELECTRICAL ENGINEERING

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain about various types of sources used in electrical circuit analysis.	7 Marks
	b)	Explain when the mesh analysis and super mesh analysis are used.	7 Marks
		(OR)	
2		State and prove Kirchhoff's laws.	14 Marks

UNIT-II

3	a)	What are the advantages of 3 phase system over single phase system?	7 Marks
	b)	Explain why j operator is used in circuit analysis.	7 Marks
		(OR)	
4	a)	Define the terms complex power, real power and reactive power.	7 Marks
	b)	Explain why j operator is used in circuit analysis.	7 Marks

UNIT-III

5	a)	Explain with a neat sketch, the construction of a DC machine.	8 Marks
	b)	In a particular DC machine if P = 8, Z = 380, N = 298 r.p.m and Φ =100mWb. Calculate generated emf for Lap winding.	6 Marks
		(OR)	
6	a)	Explain the constructional details of DC generator.	7 Marks
	b)	Derive the expression for emf equation of a DC generator.	7 Marks

UNIT-IV

7	a)	Explain the constructional details of a transformer.	7 Marks
	b)	How to get maximum efficiency for a transformer?	7 Marks
		(OR)	
8	a)	Explain the principle of working of an induction motor.	7 Marks
	b)	Describe the constructional details of an squirrel cage motors.	7 Marks

UNIT-V

9	a)	Explain the significance of Masons gain formula.	7 Marks
	b)	Mention some examples for time variant and time invariant systems.	7 Marks
		(OR)	
10	a)	Obtain the mathematical model for any physical system.	7 Marks
	b)	Explain about signal flow graphs.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

STRENGTH OF MATERIALS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Plot a tensile test diagram for steel. Explain its salient features. 7 Marks

b) A bar of 30mm diameter is subjected to a pull of 60kN. The measured extension on gauge length of 200mm is 0.09mm and the change in diameter is 0.0039mm. Calculate the Poisson's ratio and the values of the three moduli. 7 Marks

(OR)

2 a) Define a composite bar. How will you find the stresses and load carried by each member of a composite bar? 6 Marks

b) A steel rod of 3cm diameter is enclosed centrally in a hollow copper tube of external diameter 50mm and internal diameter of 40mm. The composite bar is then subjected to an axial pull of 45kN. If the length of each bar is equal to 150mm, determine: i) the stresses in the rod and tube ii) Load carried by each bar. Take E for steel as 2.1×10^5 N/mm^2 and E for Copper as 1.1×10^5 N/mm^2. 8 Marks

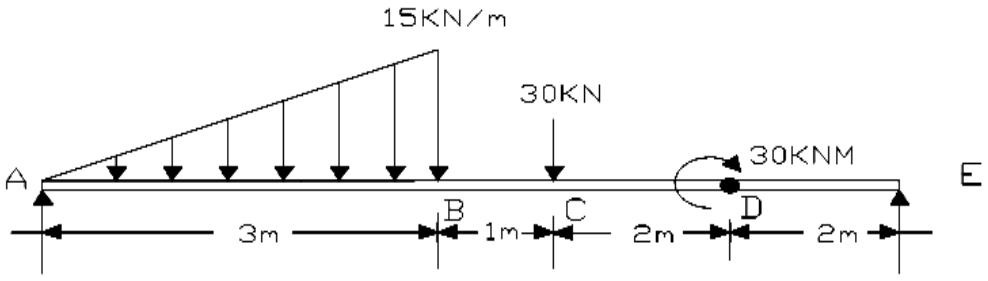
UNIT-II

3 a) Define shear force, bending moment and point of contraflexure. 6 Marks

b) For the simply supported beam having a span of 7m and supported at it ends subjected to UDL of intensity 15kN/m over a span of 3m and located at 1m from left end support, concentrated load of 20kN located at 1.5m from right end support. Draw the shear force diagram and bending moment diagram. Also, obtain the maximum bending moment. 8 Marks

(OR)

4 Draw shear force and bending diagram for the beam shown in figure. 14 Marks



UNIT-III

5 a) State the assumptions involved in the theory of simple bending. 4 Marks

b) A simply supported beam AB, 10m long carrying a point load 4kN at 3m from A and a point load 3kN at 6m from A and a uniform distributed load of 3kN/m between the point loads. Determine the position and magnitude of maximum bending moment. Draw the SF and BM diagrams. 10 Marks

(OR)

6 a) Deduce the torsion equation stating the assumptions made. 7 Marks

b) A steel shaft ABCD having a total length of 2400mm is contributed by three different sections as follows. The portion AB is hollow having outside and inside diameters 80mm and 50mm respectively, BC is solid and 80mm diameter. CD is also solid and 70mm diameter. If the angle of twist is same for each section, determine the length of each portion and the total angle of twist. Maximum permissible shear stress is 50Mpa and shear modulus 0.82×10^5 MPa. 7 Marks

UNIT-IV

7 a) List the different methods of determining beam deflections and explain the double-integration method for finding deflection of beam. 6 Marks

b) Derive an expression to find the deflection of a cantilever with a uniformly distributed load. 8 Marks

(OR)

8 A beam is of T-section, with flanges 10cm x 1cm and web 12cm x 1cm. What percentage of shearing force at any section is shared by the web? 14 Marks

UNIT-V

9 a) What assumptions are taken in the analysis of thin cylinders? Deduce expressions for the circumferential and longitudinal stresses in them. 6 Marks

b) Determine the maximum hoop stress across the section of a pipe of external diameter 600mm and internal diameter 440mm, when the pipe is subjected to an internal fluid pressure of $50N/mm^2$. 8 Marks

(OR)

10 a) A steel cylinder of 1000mm inside diameter is to be designed for an internal pressure of $4.8MN/m^2$. Take $E = 200GN/m^2$ and $\mu = \frac{1}{3}$ and calculate: i) The thickness if the maximum shearing stress is not to exceed $21MN/m^2$. ii) The increase in volume, due to working pressure, if the cylinder is 7m long with closed ends. 8 Marks

b) A thick spherical shell of 180mm internal diameter is subjected to an internal fluid pressure of $24MN/m^2$. If the permissible tensile stress is $120MN/m^2$, find the thickness of the shell. 6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

MATERIALS SCIENCE AND METALLURGY

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the most common Bravais lattices that are observed among metal? Explain.	7 Marks
	b)	What are the effects of grain and grain boundaries in metals? Explain.	7 Marks
		(OR)	
2	a)	What are the different line and surface defects in a crystal lattice structure? Explain them with neat diagrams.	7 Marks
	b)	How do you classify engineering materials? Explain them with suitable examples.	7 Marks

UNIT-II

3	a)	In binary systems, what are the different invariant reactions occurs? Explain them with neat diagrams.	7 Marks
	b)	Explain in detail Hume Rothery rules.	7 Marks
		(OR)	
4	a)	Explain the effect of alloying elements on Iron- Iron carbon system.	7 Marks
	b)	What is phase and phase diagram? What are the different phase diagrams? Explain them with neat diagrams.	7 Marks

UNIT-III

5	a)	Explain any two types of case hardening, with sketches.	7 Marks
	b)	Briefly explain the TTT diagram for eutectoid steel.	7 Marks
		(OR)	
6	a)	What is normalizing? Identify the important reasons why metals are normalizing. Explain.	7 Marks
	b)	Discuss tempering and hardening process in detail.	7 Marks

UNIT-IV

7	a)	Mention at least three different types of cast irons. How do they differ with respect to composition and structure?	7 Marks
	b)	Write short notes on aluminum alloys.	7 Marks
		(OR)	
8	a)	What are the different stainless steels? Explain.	7 Marks
	b)	What is titanium? Explain the properties and applications of Titanium and its alloys.	7 Marks

UNIT-V

9	a)	Explain sintering process.	7 Marks
	b)	Describe the applications of power metallurgy.	7 Marks
		(OR)	
10	a)	Explain about types of matrices and reinforcement.	7 Marks
	b)	Explain CFRP composites.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

THERMODYNAMICS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain thermodynamic equilibrium.	5 Marks
	b)	Differentiate between the following with suitable examples. i) System and control volume. ii) Intensive and extensive properties. iii) path and point functions.	9 Marks
		(OR)	
2	a)	A mass of 1.5 kg of air is compressed in a quasi-static process from 0.1MPa to 0.7 MPa for which pv = constant. The initial density of air is 1.16 kg/m^3. Find the work done by the piston to compress the air.	7 Marks
	b)	What are different forms of work energy? Explain each briefly.	7 Marks

UNIT-II

3	a)	What is a steady flow process? Write the steady flow energy equation and explain the various terms in it.	7 Marks
	b)	Represent schematically heat engine, heat pump and refrigerator. Give their performance.	7 Marks
		(OR)	
4	a)	What are the limitations of first law of thermodynamics? State the second law of thermodynamics. Is the second law independent of the first law?	7 Marks
	b)	Define the term coefficient of performance (COP) as applied to a refrigerator and a pump. Derive the COP relation between the pump and refrigerator.	7 Marks

UNIT-III

5	a)	What is irreversibility? Show the gain of entropy in an irreversible process on T-s diagram in the case of steam turbine and compressor.	7 Marks
	b)	Define the term availability. Find an expression for the availability of a closed system.	7 Marks
		(OR)	
6	a)	Derive the Clausius inequality expression.	7 Marks
	b)	An electric motor of 5kW is subjected to a braking test for one hour. The heat generated by frictional forces in the process gets dissipated to the surroundings at 300K. Determine the resulting increase in entropy.	7 Marks

UNIT-IV

7	a)	Define latent heat of water, Triple pint and Critical point and draw a neat P-T diagram for a pure substance.	7 Marks
	b)	Air in a closed stationary system expands in a reversible adiabatic process from 0.5 MPa, 15°C to 0.2 MPa. Find the final temperature, and per kg of air, the change in enthalpy, the heat transferred and the work done.	7 Marks
		(OR)	
8	a)	Enumerate the laws of perfect gases. Derive the equation of state.	7 Marks

b) Derive Clausius-Clapeyron's equation. Write the assumptions of this equation. 7 Marks

UNIT-V

9 a) Derive the expression from the air standard efficiency of the diesel cycle in terms of compression ratio, cut off ration and adiabatic index. 7 Marks

b) Explain the working principle of Otto cycle with the help of P-v and T-S diagrams. 7 Marks

(OR)

10 Derive an expression for efficiency and mean effective pressure for constant volume air cycle with p-V and T-s diagram. 14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

PROBABILITY AND STOCHASTIC PROCESSES

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	State and prove Baye's theorem.	7 Marks
	b)	Two manufacturing plants produce similar parts. Plant A produces 4,000 parts, 200 of which are defective. Plant B produces 8,000 parts, 300 of which are defective. One part is selected at random and found to be defective. What is the probability that the part came from plant B?	7 Marks
		(OR)	
2	a)	Suppose that P(A) = 0.7 and P(B) = 0.5 and P[(A∩B)'] = 0.1. Find i) P[(A∩B)] ii) P[(A/B)] iii) P[(B/A)]	7 Marks
	b)	Define probability based on set theory and fundamental axioms.	7 Marks

UNIT-II

3	a)	Given the Gaussian random variable with pdf $f_x(X) = e^{\frac{-x^2}{2\sigma^2}} / \sqrt{2\Pi}\,\sigma$ and let Y=x2, find pdf of y.	7 Marks
	b)	State four properties of conditional density function.	7 Marks
		(OR)	
4	a)	Find the Movement Generating Function of a uniform distribution and hence find its mean.	7 Marks
	b)	Derive mean and variance of binomial distribution.	7 Marks

UNIT-III

5	a)	Find the characteristic function for a random variable with density function $f_X(\omega) = x$ for $0 \le x \le 1$.	8 Marks
	b)	Define and explain the characteristic function.	6 Marks
		(OR)	
6	a)	Find the skew for Gaussian distributed random variable.	7 Marks
	b)	Define conditional distribution and density function of two random variables X and Y.	7 Marks

UNIT-IV

7	a)	Explain in detail about Poisson random process.	7 Marks
	b)	Define cross correlation function of two random processes X(t) and Y (t) and list the properties of cross correlation function.	7 Marks
		(OR)	
8	a)	Explain in detail the Gaussian random processes.	7 Marks
	b)	Discuss auto correlation function and its properties.	7 Marks

UNIT-V

9	a)	Classify noise and explain thermal noise in detail for stochastic processes.	7 Marks
	b)	Explain noise factor and noise figure.	7 Marks
		(OR)	
10	a)	Derive the equation for Noise figure of Cascaded system in terms of individual Noise Figures.	7 Marks
	b)	State and prove any three properties of Narrow band Noise processes.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

SEMICONDUCTOR DEVICES AND CIRCUITS

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Mention five diode characteristic parameters usually mentioned in specification sheets and explain their significance.	4 Marks
	b)	Describe the breakdown mechanism s in semiconductor diodes.	10 Marks
		(OR)	
2	a)	Explain the formation of depletion region in an open circuited PN-junction. What is the significance of barrier potential across a PN-junction?	7 Marks
	b)	A HWR circuit is supplied from a 230-V, 50Hz supply with a step-down ratio of 3:1 to a resistive load of 10kΩ. The diode forward resistance is 10Ω. Calculate maximum, average, RMS values of current, D.C output voltage, efficiency of rectification and ripple factor.	7 Marks

UNIT-II

3	a)	Explain what is meant by early effect in the case of transistor and what is its consequences.	4 Marks
	b)	Draw the circuit diagram of a collector to base bias circuit of CE amplifier and derive expression for S.	6 Marks
	c)	What is quiescent point? How do you determine it?	4 Marks
		(OR)	
4	a)	Explain how you would locate the operating point using the load line.	7 Marks
	b)	Explain, with necessary circuit diagram, the collector to base bias arrangement and derive at an expression for its stability factor.	7 Marks

UNIT-III

5	a)	Define h-parameters. How do you determine h-parameters from transistor characteristics?	7 Marks
	b)	Draw the circuit diagram of CB amplifier circuit and its h-parameter equivalent circuit. List the characteristics of a CB amplifier.	7 Marks
		(OR)	
6	a)	Derive the equations for voltage gain, current gain input impedance and output impedance for BJT using low frequency h-parametric CE model.	7 Marks
	b)	Determine the h-parameters from the characteristics of CB configuration. Mention its applications.	7 Marks

UNIT-IV

7	a)	Explain the construction and principle of operation of JFET.	8 Marks
	b)	Write the characteristics of MOSFET.	6 Marks
		(OR)	
8	a)	Explain the common source amplifier and derive expression for gain of the amplifier.	8 Marks
	b)	Describe the generalized FET amplifier.	6 Marks

UNIT-V

9	a)	Write the applications of UJT.	6 Marks
	b)	Explain the operation of varactor diode.	8 Marks
		(OR)	
10	a)	Describe the process of tunneling in a Tunnel diode and analyze it with the help of energy band diagrams.	8 Marks
	b)	Explain the principle of operation of Schkottky Barrier Diode.	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

ELECTRONIC DEVICES AND CIRCUITS

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Compare half-wave, full-wave and bridge rectifiers.	7 Marks
	b)	An L-C filter is to be used to provide a d.c. output with 1% ripple from a full-wave rectifier operating at 50 Hz. Assuming L/C = 0.01, determine the required values of L and C.	7 Marks
		(OR)	
2	a)	Compare the performance of inductive, L-Section and π-section filters.	7 Marks
	b)	Calculate the value of inductance to use in the inductor filter connected to a full-wave rectifier operating at 60Hz to provide a d.c. output with 4% ripple for 100Ω load.	7 Marks

UNIT-II

3	a)	What is the necessity to stabilize the operating point of transistor amplifier and what is thermal runaway?	6 Marks
	b)	For a fixed bias configuration determine I_c, R_c, R_b and V_{ce} using the following specifications: V_{cc} = 12V, V_c = 6V, β= 80, I_b = 40μA.	8 Marks
		(OR)	
4	a)	Draw the circuit and explain the characteristics of BJT (input and output characteristics) in CE configuration.	9 Marks
	b)	Differentiate bias stabilization and compensation techniques.	5 Marks

UNIT-III

5	a)	Explain in detail the working of JFET and draw its drain and transfer characteristics.	10 Marks
	b)	Compare JFET and MOSFET.	4 Marks
		(OR)	
6	a)	What are the differences between BJT and JFET?	6 Marks
	b)	Explain how FET acts as voltage variable resistor.	8 Marks

UNIT-IV

7	a)	Draw the circuit diagram of a current series feedback amplifier and derive expressions for voltage gain with and without feedback.	6 Marks
	b)	Derive an expression for frequency of oscillation of colpitt's oscillator.	8 Marks
		(OR)	
8	a)	With a neat sketch, explain the working of RC phase shift oscillator.	8 Marks
	b)	What is meant by feedback? What are the effects of negative feedback?	6 Marks

UNIT-V

9	a)	Explain the construction and working of Unijunction Transistor.	8 Marks
	b)	What are the advantages and disadvantages of Tunnel diode?	6 Marks
		(OR)	
10	a)	Explain principle behind varactor diode and list out its applications.	7 Marks
	b)	Sketch and explain the working of tunnel diode.	7 Marks

CODE No.:14BT30501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

DATA STRUCTURES

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	Write an algorithm to insert an element in a circular linked list.	14 Marks
	(OR)	
2	Write about traversing linked lists with an example and write an algorithm for traversals.	14 Marks

UNIT-II

3	What is a stack? Explain various operations on a stack.	14 Marks
	(OR)	
4	Write an algorithm for converting infix expression to postfix form.	14 Marks

UNIT-III

5	Consider a list of elements -15, -6, 0, 7, 9, 23, 54, 82, 101, 112, 125, 131, 142, 151. Trace a Binary Search algorithm for searching 151 and -14.	14 Marks
	(OR)	
6	What is AVL tree? Explain about different rotation patterns in balancing with examples.	14 Marks

UNIT-IV

7	What is a graph? How is it represented? Explain different Graph traversals.	14 Marks
	(OR)	
8	Explain B-Trees.	14 Marks

UNIT-V

9	Write an algorithm for Quick Sort and analyze its time complexity.	14 Marks
	(OR)	
10	What is a hash function? Explain different hash functions with examples.	14 Marks

CODE No.:14BT30502 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

DIGITAL LOGIC DESIGN

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Perform the following using BCD Arithmetic. i) 126310 + 968710. ii) 767210 + 337810.	8 Marks
	b)	Convert the following: i) 99710 = ( )16. ii) 25710 = ( )8. iii) 65410 = ( )2.	6 Marks
		(OR)	
2	a)	What is canonical form? Explain different canonical forms with an example.	7 Marks
	b)	Draw the logic diagram for the given Boolean expression $F = A\overline{B} + \overline{C}D + ABC$.	7 Marks

UNIT-II

3	a)	Simplified the Boolean Function $F(A, B, C, D) = \Sigma(0,2,5,8,9,13,15)$ And don't care condition $D(A, B, C, D) = \Sigma(1,7,14)$	9 Marks
	b)	Implement the above simplified function using NAND, NOR Gates.	5 Marks
		(OR)	
4		Obtained the simplified Expression in sum of products for the following. i) $F(x,y,z) = \Sigma(2,3,6,7)$. ii) $F(w,x,y,z) = \Sigma(2,3,12,1314,15)$. iii) $F(A,B,C,D) = \Sigma(4,6,7,15)$.	14 Marks

UNIT-III

5	a)	Realize a full sub tractor using MUX.	7 Marks
	b)	Realize a full adder using MUX.	7 Marks
		(OR)	
6		Explain about Multiplexers and De-Multiplexers in detail	14 Marks

UNIT-IV

7	a)	Implement JK Flip-Flop with NAND gate.	7 Marks
	b)	Draw the logic diagram for Master-Slave D Flip-Flop.	7 Marks
		(OR)	
8		Explain the design of Sequential circuit with an example. Show the State Reduction, State assignment	14 Marks

UNIT-V

9	a)	Discuss about Sequential Programmable Devices.	6 Marks
	b)	Differentiate PAL and PLA in detail.	8 Marks
		(OR)	
10		Explain in detail about Error Detection and Error Correction codes with examples.	14 Marks

CODE No.:14BT31002 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

SENSORS AND TRANSDUCERS

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define Linearity, Sensitivity and Reproducibility.	7 Marks
	b)	Draw the second order system for a Step response and explain the same.	7 Marks
		(OR)	
2	a)	List the advantages of a Mathematical model of a measuring system.	7 Marks
	b)	Derive and sketch the First order response of a step input.	7 Marks

UNIT-II

3	a)	Explain the construction of a Resistive Hygrometer and list its applications.	7 Marks
	b)	Explain the working principle of hot wire Resistive transducer with a neat diagram.	7 Marks
		(OR)	
4	a)	What is Gauge factor? Derive the expression for gauge factor in a strain gauge.	7 Marks
	b)	Explain the construction and working of a Metal strain gauge.	7 Marks

UNIT-III

5	a)	Demonstrate the working of electromagnetic sensor based tachogenerator.	7 Marks
	b)	Discuss about frequency response of capacitive transducers.	7 Marks
		(OR)	
6	a)	Sketch the equivalent circuit of capacitive element.	7 Marks
	b)	Explain the features of Hall effect sensors.	7 Marks

UNIT-IV

7	a)	Write short notes on Thermoelectric effects.	7 Marks
	b)	Explain the working of Electrochemical sensors.	7 Marks
		(OR)	
8	a)	Explain Photo voltaic effect.	7 Marks
	b)	Explain how the piezoelectric transducer can be used to measure force and pressure.	7 Marks

UNIT-V

9	a)	List out techniques used for producing thin film sensors and describe about all of them in brief.	7 Marks
	b)	Demonstrate the working of Magnetic and Electric Incremental Position Encoders.	7 Marks
		(OR)	
10	a)	Define Piezo-resistive effect and explain why semiconductor strain gauges have high values of gauge factor. Also discuss temperature effects on semiconductor gauges.	8 Marks
	b)	Discuss any three applications of MEMS.	6 Marks

CODE No.:14BT31201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

DISCRETE MATHEMATICAL STRUCTURES

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Show that $\neg(P \vee Q) \Leftrightarrow \neg P \wedge \neg Q$. 7 Marks

b) Obtain principal conjunctive normal form of $(\neg P \rightarrow R) \wedge (Q \Leftrightarrow P)$. 7 Marks

(OR)

2 a) Show that $R \rightarrow S$ is a valid conclusion from the premises $P \rightarrow (Q \rightarrow S), \neg R \vee P$ and Q. 7 Marks

b) Prove that $(\exists x)(P(x) \wedge Q(x)) \Rightarrow (\exists x) P(x) \wedge (\exists x) Q(x)$. 7 Marks

UNIT-II

3 a) Give an example of a relation which is symmetric, antisymmetric, compatibility and transitive. 7 Marks

b) What is poset? Draw the Hasse diagram of positive divisors of 210. 7 Marks

(OR)

4 a) Let $A = \{a,b,c\}$, $p(A)$ is the power set of A. Let $\subseteq$ be the inclusion relation on the elements of $p(A)$. Draw Hasse diagram of $(p(A), \subseteq)$. 7 Marks

b) Let $(L, \leq)$ be a lattice and $a,b,c \in L$ such that $b \leq c$. Prove that (i) $a * b \leq a * c$ (ii) $a \oplus b \leq a \oplus c$. 7 Marks

UNIT-III

5 a) Prove that intersection of two sub monoids of a monoid is a monoid. 7 Marks

b) Show that any group G is abilian iff $(ab)^2 = a^2b^2$ for all a,b€ R. 7 Marks

(OR)

6 a) Let ({a,b},*) be a semi group where a*a=b show that i) a*b=b*a ii) b*b=a. 7 Marks

b) Show that every cyclic group is abelian group. 7 Marks

UNIT-IV

7 a) How many 5 digit number can be composed of the digit in the number 1 2 3 3 4 2 3 3. 7 Marks

b) Solve the Recurrence Relation $a_{n+2} - 2a_{n+1} + a_{n-2} = 2^n$ where a_0=1 and a_1=2 by the method of Generating function. 7 Marks

(OR)

8 a) Prove the Pascals identity C(n, r) = C(n-1, r) + C(n-1, r-1). 7 Marks

b) Compute the number of integers between 1 and 1000 that are not divisible by 2, 3, 5 or 7. 7 Marks

UNIT-V

9 a) Define (i) Connected graph (ii) Connected component with an example for each. 7 Marks

b) Write a short note on (i) Euler circuit (ii) Hamiltonian circuit. 7 Marks

(OR)

10 a) Define (i) Tree (ii) Binary tree with an example for each. 7 Marks

b) Explain Prim's algorithm with an example. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

MATRICES AND NUMERICAL METHODS

[Civil Engineering,Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Test for consistency and then solve the system of equations 7 Marks
$\mathbf{x + 2y - z = 3,\ \ 3x - y + 2z = 1,\ \ 2x - 2y + 3z = 2\ ,\ \ x - y + z = -1}$.

b) State Cayley - Hamilton theorem and using it find the inverse of the 7 Marks
matrix $\begin{bmatrix} 1 & 0 & 2 \\ 0 & 1 & 2 \\ 1 & 2 & 0 \end{bmatrix}$

(OR)

2 a) Find the values of 'a' and 'b' for which the equations $x + ay + z = 3$, 7 Marks
$x + 2y + 2z = b$, $x + 5y + 3z = 9$ will have (i) unique solution
(ii) infinite number of solutions (iii) no solution.

b) Find the eigen values and the corresponding eigen vectors of the 7 Marks
matrix $\begin{bmatrix} 2 & 0 & 1 \\ 0 & 2 & 0 \\ 1 & 0 & 2 \end{bmatrix}$

UNIT-II

3 a) Using Newton-Raphson method find the root of the equation $\boldsymbol{x + \log_{10} x = 3.375}$, 7 Marks
correct to three decimal places.

b) From the following table of half-yearly premium for policies maturing at 7 Marks
different ages, estimate the premium for policies maturing at age of 46.

Age	45	50	55	60	65
Premium (in rupees)	114.84	96.16	87.32	74.48	68.48

(OR)

4 a) Find a real root of the equation $\boldsymbol{x^3 - 2x - 5 = 0}$ by the method of false position, 7 Marks
correct to three decimal places.

b) A Chemical company, wishing to study the effect of extraction operation, 7 Marks
obtained the data shown in the following table:

Extraction time minutes(x):	27	45	41	19	3	39	19	49	15	31
Efficiency(y):	57	64	80	46	62	72	52	77	57	68

Fit a straight line to the given data by the method of least squares.

UNIT-III

5 a) Using Runge - Kutta method, find y(0.2) for the equation $\frac{dy}{dx} = \frac{y - x}{y + x}$, y(0) =1. 7 Marks

Take step size h=0.2.

b) The population of a certain town (as obtained from census data) is shown in the 7 Marks
following table.

year	1971	1981	1991	2001	2011
Population in thousands	19.96	39.65	58.81	77.21	94.61

Estimate the rate of growth of population in the year 1981.

(OR)

6 a) Using Euler method, solve for y at x=2 from dy/dx=3 x^2+1 and y=1 when x=0. Taking step size h=0.25. 7 Marks

b) From the following data, find the area bounded by the curve and the x-axis from x = 7.47 to x = 7.52. 7 Marks

x	7.47	7.48	7.49	7.50	7.51	7.52
y=f(x)	1.93	1.95	1.98	2.01	2.03	2.06

UNIT-IV

7 a) 7 Marks

Given that $f(x) = \begin{cases} 1+\frac{2x}{\pi} & for \ -\pi \le x < 0 \\ 1-\frac{2x}{\pi} & for \ 0 < x \le \pi \end{cases}$

Show that $f(x) = \frac{8}{\pi^2}\left(\frac{\cos x}{1^2} + \frac{\cos 3x}{3^2} + .\frac{\cos 3x}{3^2} + ...\right)$.

Deduce from this $\frac{1}{1^2} + \frac{1}{3^2} + \frac{1}{5^2} + ... = \frac{\pi^2}{8}$.

b) 7 Marks

Use Fourier sine integral representation, show that $\int_0^\infty \frac{\omega \sin \omega x}{1+\omega^2} d\omega = \frac{\pi}{2} e^{-x} (x > 0)$.

(OR)

8 a) Express **f(x) = cos x, 0 < x < π** in half range sine series. 7 Marks

b) 7 Marks

Express the function $f(x) = \begin{cases} 1 & for \ |x| \le 1 \\ 0 & for \ |x| > 1 \end{cases}$ as a Fourier integral , hence evaluate $\int_0^\infty \frac{\sin\lambda \cos\lambda x}{\lambda} d\lambda$.

UNIT-V

9 a) Form the partial differential equation by eliminating the arbitrary function **f** from **$f(x^2+y^2, x^2-z^2)=0$**. 4 Marks

b) A tightly stretched string with fixed end points **x = 0** and **x = L** is initially at rest in its equilibrium position. If it is set vibrating by giving to each of its points a velocity **μx(L-x)**. Find the displacement of the string at any distance **x** from one end at any time **t**. 10 Marks

(OR)

10 a) Form the partial differential equation by eliminating the arbitrary functions **f_1** and **f_2** from **$z= f_1(y+2x)+f_2(y-3x)$**. 4 Marks

b) Solve one dimensional heat equation by the method of separation of variables $\frac{\partial u}{\partial t} = c^2 \frac{\partial^2 u}{\partial x^2}$. 10 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

SPECIAL FUNCTIONS AND COMPLEX ANALYSIS

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Define Beta and Gamma functions and derive the relation between them. 7 Marks

b) Show that $\frac{d}{dx}\left[x^n J_n(x)\right] = x^n J_{n-1}(x)$. 7 Marks

(OR)

2 a) Express $\int_0^1 x^m(1-x^n)^p\,dx.$ in terms of gamma function and evaluate $\int_0^1 x^5(1-x^3)^{10}\,dx$. 7 Marks

b) Derive orthogonality relation of Bessel functions. 7 Marks

UNIT-II

3 a) P.T the function f(z) defined by $f(z) = \frac{x^3(1+i) - y3(1-i)}{x^2+y^2}, z \neq 0 \; and \; f(0) = 0$ is continues and the Cauchy's - Riemann equations are satisfied at the origin, yet f ′ (0) does not enlists. 7 Marks

b) If f (z) is an analytic function of z, prove that $\left(\frac{\partial^2}{\partial x^2} + \frac{\partial^2}{\partial y^2}\right) |\, \mathbf{Rf\,(z)}\,|^2 = \mathbf{2}\,|\,\mathbf{f'(z)}\,|^2$. 7 Marks

(OR)

4 a) It **U-V = (x-y) (x^2+4xy+y^2)** and f(z) = U +IV is analytic function of z = x + iy. Find f(z)in terms of z. 7 Marks

b) Determine the analytic function whose real part is $\mathbf{x^3 - 3xy^2 + 3x^2 - 3y^2 + 1}$. 7 Marks

UNIT-III

5 a) Evaluate $\int_C (y^2 + 2xy)dx + (x^2 - 2xy)dy$ where ***C*** is the boundary of the region given by $y = x^2$ and $x = y^2$. 7 Marks

b) Verify Cauchy's theorem for the function $\boldsymbol{f(z) = 3z^2 + iz - 4}$ on a square with vertices $\mathbf{1 \pm i}$ and $\mathbf{-1 \pm i}$. 7 Marks

(OR)

6 a) Find the Laurent series of $\frac{7z-2}{(z+1)z(z-2)}$ in the annulus $\mathbf{1 < |\, z+1\,| < 3}$. 7 Marks

b) Evaluate $\int_C \frac{\cos \pi z^2}{(z-1)(z-2)^3}\,dz$ where C is $|\, z\,| = 3$, by using Cauchy's integral formula. 7 Marks

UNIT-IV

7 a) Determine the poles and corresponding residues for the function $f(z) = \frac{z^2}{(z-1)(z-2)^2}$. 7 Marks

b) By the method of residues, evaluate $\int_0^{2\pi} \frac{d\theta}{1-2a\sin\theta+a^2}$ $0 < a < 1$. 7 Marks

(OR)

8 a) Calculate the value of $\oint_c \frac{z-3}{z^2+2z+5}dz$, where C is the circle **|z+1+i 1=2**. 7 Marks

b) Evaluate $\int_0^{\infty} \frac{dx}{(x^2+1)^2}$. 7 Marks

UNIT-V

9 a) Show that the function $w = \frac{4}{z}$ transforms the straight line $\boldsymbol{x = c}$ in the z-plane into a circle in the w-plane. 7 Marks

b) Find the bilinear transformation which maps the points (1, i, -1) in the z-plane in to the points (1, 0, -i) in the w-plane. Hence find the invariant points of this transformation. 7 Marks

(OR)

10 a) Show that the bilinear transformation maps circles to circles. 7 Marks

b) Discuss about the transformation $w = Cos\ z$. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

PROBABILITY AND STATISTICS

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Find the mean and variance of Mathematical Expiation. 7 Marks

b) The probability density function of a continuous random variable 'X' is given by $f(x) = A\,x(2-x)$, where $U \le x \le 2$ find β_2 and β_1 and 'A' is constant. 7 Marks

(OR)

2 a) A random variable x has the following probability function. 7 Marks

x	0	1	2	3	4	5	6	7
Y	0	K	2k	2k	3k	K^2	$2k^2$	$7k^2+k$

Determine: (i) K (ii) $p(x < 6)$ (iii) $p(x > 6)$ (iv) $p(0 < x < 5)$.

b) State and prove law of addition theorem for '2' events. 7 Marks

UNIT-II

3 a) Derive mean and variance of binomial distribution. 7 Marks

b) Samples of (n=6) items are drawn at random from the production process which is making 10% defectives. Calculate the probabilities of 0, 1, 2, 3, 4, 5 and 6 defectives in a sample. 7 Marks

(OR)

4 a) Derive the mean and variance of normal distribution. 7 Marks

b) If x is a Poisson variable such that $p(x = 1) = 24\,p(x = 3)$, find the probability $p(x=0)$. 7 Marks

UNIT-III

5 a) Write briefly: 7 Marks
i) Advantages and limitations of statistical quality control.
ii) np and c charts.

b) Obtain the rank correlation co-efficient for the following data. 7 Marks

x	9	12	15	17	19
y	7	8	9	12	15

(OR)

6 a) Derive any three properties of Regression Lines. 7 Marks

b) Find the correlation co-efficient between x and y variables. 7 Marks

X	9	11	14	15	17	19
Y	7	5	8	9	11	12

UNIT-IV

7 a) 20 People were attacked by a disease and only 18 survived. Will you reject the hypothesis that the survival rate if attacked by this disease is 85% in favor of the hypothesis that is more than 5% level? 7 Marks

b) Among 900 people in a state, 90 are found to be chapatti eaters. Find the standard error at proportion of chapatti eaters and also construct 99% confidence internal. 7 Marks

(OR)

8 a) Define the hypothesis, null hypothesis, alternative hypothesis and level of significance with suitable example — 7 Marks

b) In a city 400 out of 600 were smokers. Does this information support the conclusion that the majority of men in this city are smokers? (z = 8.3 majority of people are smokers). — 7 Marks

UNIT-V

9 a) A random sample of 10 boys had the IQs; 70, 120, 110, 101, 88, 83, 95, 98, 107, 100. Does this data support the assumption of population IQ of 100 (tabulated value 2.262 at 5% level of significance) — 7 Marks

b) Two independent random samples each of 8 individuals provide the following data. Estimate the variance ration and test the significance. — 7 Marks

Sample-I	63	64	65	65	66	66	67	68
Sample-II	69	66	67	67	66	68	69	69

(tabulated each 3.80 at 5% level of significance)

(OR)

10 a) Two horses A and B were tested according to the time (in seconds) to run a particular track with the following results. — 7 Marks

Horse (A)	28	30	32	33	33	29	34
Horse (B)	29	30	30	24	27	29	-

Test whether the two horses have the same running capacity.
(tabulated value 2.20 at 5% level of significance).

b) Fit a Poisson distribution to the following data and test – the goodness of fit at 5% leave of significance. — 7 Marks

X	0	1	2	3	4	5	6	7
F	305	366	210	80	28	9	2	1

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

MECHANICS OF SOLIDS

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) The ultimate stress for a hollow steel column which carries an axial load of 2kN is 500N/mm^2. If the external diameter of the column is 250mm, determine the internal diameter. Take the factor of safety as 4.0. 7 Marks

b) Find the Young's modulus for a rod, which tapers uniformly from 40mm to 25mm diameter in a length of 400mm. The rod is subjected to a load of 6kN and extension of the rod is 0.04mm. 7 Marks

(OR)

2 A 10mm dia steel rod passes centrally through a copper tube of 25mm external and 15mm internal dia and 2.5m long. The tube is closed at each end by thick plates screwed by nuts. The nuts are tightened until the copper tube is reduced in length by 0.6mm. The whole assembly is then raised in temperature by 20ºC. Calculate the stresses in the steel rod and copper tube before and after the rise in temperature. The thickness of the end plates remains unchanged. 14 Marks

$E_{Steel} = 2.08 \times 10^5$ N/mm^2. $E_{Copper} = 1.04 \times 10^5$ N/mm^2

$\alpha_{Steel} = 12 \times 10^{-6}/^{o}$C. $\alpha_{Copper} = 17.5 \times 10^{-6}/^{o}$C.

UNIT-II

3 Sketch the shear force and bending moment diagrams of a ladder 4m length inclined 30^0 with the horizontal, resting against a smooth wall and rough horizontal floor. Weight of the ladder is 200N/m. 14 Marks

(OR)

4 A girder 30m long carrying a uniformly distributed load of **w** kN/m is to be supported on two piers 18m apart so that the greatest B.M shall be as small as possible. Find the distances of the piers from the ends of the girder and the maximum B.M. Draw BMD and SFD for this loading condition. 14 Marks

UNIT-III

5 A beam of size 150mm wide, 250mm deep carries a uniformly distributed load of **w** kN/m over entire span of 4m. A concentrated load 1 kN is acting at a distance of 1.2m from the left support. If the bending stress at a section 1.8 m from the left support is not to exceed 3.25N/mm^2, find the load w. 14 Marks

(OR)

6 A Simply supported beam of length 6 metres carries a udl of 20kN/m throughout its length and a point of 30kN at 2 metres from the right support. Draw the shear force and bending moment diagram. Also find the position and magnitude of maximum bending moment. 14 Marks

UNIT-IV

7	In a compound helical spring, the inner spring is arranged within and concentric with the outer one, but short by 10mm. The outer spring has 10 coils of 30mm mean diameter and 3mm as the diameter of wire. Find the stiffness of inner spring if an axial load of 100 N on the compound spring causes the outer spring to compress by 20mm. If the radial clearance between the springs is 2mm, find the wire diameter of inner spring when it has 8 coils.	14 Marks

(OR)

8	Design the diameter of a steel shaft to transmit 150kW power at 150 r.p.m. The maximum shear stress is limited to 60MPa the angle of twist is limited to 2.5º in its length of 3m. Rigidity modulus of steel is 80GPa	14 Marks

UNIT-V

9	A thin cylinder of steel, having mean diameter of 200mm, thickness 20mm is subjected to an internal pressure of 8MPa. If length of the cylinder is 750mm, find the increase in diameter, increase in length and change in increase in the internal volume due to internal pressure. Take E = 200GPa.	14 Marks

(OR)

10	Derive an expression for the shrink fit of a compound cylinder.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

BUILDING MATERIALS AND CONCRETE TECHNOLOGY

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss the Geological, Physical and Chemical Classification of Rocks.	7 Marks
	b)	Define the term Quarrying and briefly enumerate the various methods of quarrying which are commonly used.	7 Marks

(OR)

2	a)	What is seasoning of timber and why is it done? Discuss in brief.	7 Marks
	b)	List various types of classification of rock with examples. Discuss in brief.	7 Marks

UNIT-II

3	a)	Distinguish between Fat lime and Hydraulic Lime.	7 Marks
	b)	Explain any one method of Manufacturing Lime.	7 Marks

(OR)

4	a)	What do you understand by the term Slaking of Lime? Why is it necessary? Explain any one method of Slaking of Lime.	7 Marks
	b)	Explain any four simple tests carried out on lime to assess its quality.	7 Marks

UNIT-III

5	Define the term Segregation and Bleeding. What are the factors responsible and the remedial measures for the same?	14 Marks

(OR)

6	Explain the various field and laboratory tests conducted on Cement.	14 Marks

UNIT-IV

7	Define Curing of Concrete? Explain the various methods of Curing of Concrete.	14 Marks

(OR)

8	Outline the various Non-Destructive testes conducted on Hardened Concrete.	14 Marks

UNIT-V

9	Define Creep of Concrete and explain the various factors influencing Creep of Concrete.	14 Marks

(OR)

10	Design a M35 concrete mix using IS Method of Mix for the following data.	14 Marks

1) Maximum size of aggregate - 20mm (Angular)
2) Degree of workability - 0.90 compaction factor
3) Quality Control - good
4) Type of Exposure - mild
5) Specific Gravity
   a) Cement - 3.12
   b) Sand - 2.63
   c) Coarse aggregate - 2.66
6) Water absorption:
   a) Coarse aggregate - 0.5%
   b) Fine aggregate - 1.0%
7) Free surface moisture:
   a) Coarse aggregate - Nil
   b) Fine aggregate - 2.2%
8) Sand confirms to Zone I grading.

Assume any other data required suitably

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

FLUID MECHANICS-I

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Derive an expression for the depth of centre of pressure from free surface of liquid of an inclined plane surface submerged in the liquid.	6 Marks
	b)	Find the total pressure and position of centre of pressure on a triangular plate of base 2.4m and height 3.6m which is immersed in water in such a way that the plan of the plate makes an angle of 600 with the free surface of the water. The base of the plate is parallel to water surface and is at a depth of 3.0m from water surface.	8 Marks
		(OR)	
2	a)	Define and write short note on the fallowing. i) Pascal Law. ii) Hydrostatic law. iii) Surface Tension.	6 Marks
	b)	The velocity distribution in a fluid is given by u = 30000 y (1-2y) where u is the velocity in m/sec at a distance of y meters normal to the boundary. If the dynamic viscosity of fluid is 1.8 x 10 poise, determine the shear stress at y = 0.2m.	8 Marks

UNIT-II

3	a)	Define Steady flow and unsteady flow.	6 Marks
	b)	State Bernoulli's theorem for steady flow of an incompressible fluid. Derive an expression for Bernoulli's equation from the first principle and state the assumptions made for such a derivation.	8 Marks
		(OR)	
4		Lubricating oil of specific gravity 0.82 and dynamic viscosity 12.066 x 10^{2}N.s/m^{2} is pumped at a rate of 0.02 m^{3}/s through a 0.15m diameter 300m long pipe. Calculate the pressure drop, average shear stress at the wall of the pipe and the power required to maintain the flow, if the pipe is inclined at 15^{0} with the horizontal and the flow is in upward direction.	14 Marks

UNIT-III

5		Explain the terms Hydraulic gradient line and Total energy line. A horizontal venturimeter with inlet and throat diameters 30cm and 15cm respectively is used to measure the flow of water. The reading of the differential manometer connected to the inlet and the throat is 20cm of mercury. Determine the rate of flow. Take C_d = 0.98.	14 Marks
		(OR)	
6		Give the classifications of orifices and mouthpieces. A rectangular channel 2.0m wide has a discharge of 250litres per second, which is measured by a right-angled V-notch weir. Find the position of the apex of the notch from the bed of the channel if maximum depth of the water is not to exceed 1.3m. Take C_d = 0.62.	14 Marks

UNIT-IV

7 a) Determine: i) the pressure gradient, ii) the shear stress at the two horizontal parallel plates and iii) the discharge per meter width for the laminar flow of oil with a maximum velocity of 2m/sec between two horizontal parallel fixed plates which are 100mm a part. Given $\mu = 2.4525 N\ s/m^2$. 7 Marks

b) Describe Reynold's experiment to demonstrate the two types of flow. 7 Marks

(OR)

8 a) Prove that the velocity distribution of viscous flow between two parallel plates when both plates are fixed across a section parabolic in nature. Also prove that maximum velocity is equal to one and half times the average velocity. 7 Marks

b) Water is flowing between two large parallel plates which are 2m a part. Determine maximum velocity, pressure drop per unit length and shear stress at walls of the plate, if the average velocity is 0.4 m/sec. Take viscosity of water as 0.01 poise. 7 Marks

UNIT-V

9 What is dimensional analysis? What are the methods of dimensional analysis? Find an expression for the drag force on smooth sphere of diameter D, moving with an uniform velocity V in a fluid of density ρ and dynamic viscosity μ. 14 Marks

(OR)

10 What do you mean by dimensionless numbers? Name the various dimensionless numbers and give the expressions for the dimensionless numbers. In the model test of a spillway the discharge and velocity of flow over the model were $2m^3/s$ and 1.5m/s respectively. Calculate the velocity and discharge over the prototype which is 36 times the model size. 14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

ELECTROMAGNETIC FIELDS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define electric field intensity. Explain in detail the different ways of obtaining elastic field.	7 Marks
	b)	Derive the expression for energy density in electric field.	7 Marks
		(OR)	
2	a)	State and explain Gauss law.	7 Marks
	b)	Two dipoles with dipole moments -5a_Z Rc/m and 9 a_Z Rc/m are located at points (0, 0, -2) and (0, 0, 3) respectively. Find the potential at the origin.	7 Marks

UNIT-II

3	a)	Derive the expression for Electric Field Inside a Dielectric Material.	7 Marks
	b)	What is Polarization? Explain about different types of polarization in detail.	7 Marks
		(OR)	
4	a)	Derive the expressions for energy stored and energy density in static electric field.	7 Marks
	b)	Find the stored energy in static electric field system of four identical charges Q = 4.5nC, at the corners 1m on a side.	7 Marks

UNIT-III

5	a)	State and explain Ampere's circuital Law.	7 Marks
	b)	Obtain the expression for MFI due to a Solenoid Current carrying wire by applying Biot-Savart's Law.	7 Marks
		(OR)	
6	a)	State and prove Stoke's Theorem.	7 Marks
	b)	Given magnetic field intensity H = 4 ax + 2 ay - 3 az A/m at a point in free space. Find the magnetic flux density.	7 Marks

UNIT-IV

7	a)	Derive the expression for force between two straight and parallel current carrying conductors placed in magnetic field.	7 Marks
	b)	Determine the force per meter length between two long parallel wires A and B separated by 6cm in air Carrying currents of 42A. (i) in same direction. (ii) in the opposite direction.	7 Marks
		(OR)	
8	a)	Obtain the expression for self-inductance of a toroidal solenoid.	7 Marks
	b)	Derive the expressions for energy stored and energy density in magnetic field.	7 Marks

UNIT-V

9	a)	Explain the difference between induced, transformer and motional **emf.**	7 Marks
	b)	Write the point form of Maxwell's equations. Explain their significance.	7 Marks
		(OR)	
10	a)	Define displacement current. Derive the expression for displacement current density.	7 Marks
	b)	Write the integral form of Maxwell's equations. Explain their significance.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

DC MACHINES

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Discuss briefly about torque production in rotating machines and derive an expression for torque produced in rotation machine in terms of current and magnetic flux. 14 Marks

(OR)

2 a) Derive an expression for magnetic stored energy in a singly excited system with the help of a neat diagram. 7 Marks

b) List out examples of singly excited and multiple excited electrical machines 7 Marks

UNIT-II

3 a) Explain about different excitation methods of DC generators. 7 Marks

b) Explain about demagnetizing AT/pole and cross magnetizing AT/pole in DC generators. 7 Marks

(OR)

4 a) Explain the principle of operation of DC generator. Why is a commutator and brush arrangement necessary for the operation of a DC generator? 7 Marks

b) A 4 pole, long-shunt lap-wound generator supplies 25KW at a terminal voltage of 500V. The armature resistance is 0.03Ω, series field resistance is 0.04Ω and shunt field resistance is 200Ω. The brush drop may be taken as 1.0V. Determine the e.m.f. generated. Calculate also the number of conductors if the speed is 1200 r.p.m. and flux per pole is 0.02 weber. Neglect armature reaction. 7 Marks

UNIT-III

5 a) Explain the following characteristics of shunt wound DC generators. 7 Marks
i) Magnetisation characteristics.
ii) External and internal characteristics.

b) The open-circuit characteristics of a separately excited DC generator driven at 1000 r.p.m. is as follows: 7 Marks

Field Current	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6
E.M.F.volts	30.0	55.0	75.0	90.0	100.0	110.0	115.0	120.0

If the machine is connected as a shunt generator and driven at 1000 r.p.m. and has a field resistance of 100Ω, find;
i) open circuit voltage and exciting current.
ii) the critical resistance.
iii) resistance to induce 115 volts on open circuit.

(OR)

6 a) Why the parallel operation of series generators is unstable? What remedial measures are taken for its successful operation? 7 Marks

b) A shunt generator has an induced voltage of 254V. When the machine is laded, the terminal voltage drops down to 240V. Neglecting armature reaction, determine the load current, if the armature resistance is 0.04Ω, and the field circuit resistance is 24Ω. 7 Marks

UNIT-IV

7 a) Derive the torque equation in a DC motor. Explain. 7 Marks

b) Determine developed torque and shaft torque of 220V, 4 pole series motor with 800 conductors wave connected supplying a load of 8.2KW by taking 45A from the mains. The flux per pole is 25mWb and its armature circuit resistance is 0.6Ω. 7 Marks

(OR)

8 a) Explain the meant by back emf. Is the back emf greater or lesser than applied voltage. Why? Explain the significant of back EMF in DC motor. 7 Marks

b) A DC series motor operates at 800 r.p.m with a line current of 100A from 230V mains. Its armature circuit resistance is 0.15Ω and its field resistance 0.1Ω. Find the speed at which the motor runs at a line current of 25A, assuming that the flux at this current is 45% of the flux at 100A. 7 Marks

UNIT-V

9 a) Discuss how to conduct retardation test. Explain how the test results are obtained. 7 Marks

b) In a retardation test on a DC motor, with its field normally excited, the speed fell from 1525 to 1475 r.p.m in 25 seconds. With an average load of 1.0KW supplied by the armature, the same speed drop occurred in 20 seconds. Find out the moment of inertia of the rotating parts in $kg.m^2$. 7 Marks

(OR)

10 a) Explain the method of determination of the efficiency of DC series machine by Field's test. 7 Marks

b) Two identical DC machines when tested by Hopkinson's method gave the following test results: 7 Marks

Field currents are 2.5A and 2A. Line voltage is 220V. Line current including both the field currents is 10A. Motor armature current is 73A. The armature resistance of each machine is 0.05Ω.

Calculate the efficiency of both the machines.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

ELECTRIC CIRCUITS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Develop dual network for the network shown in Fig.1. 7 Marks

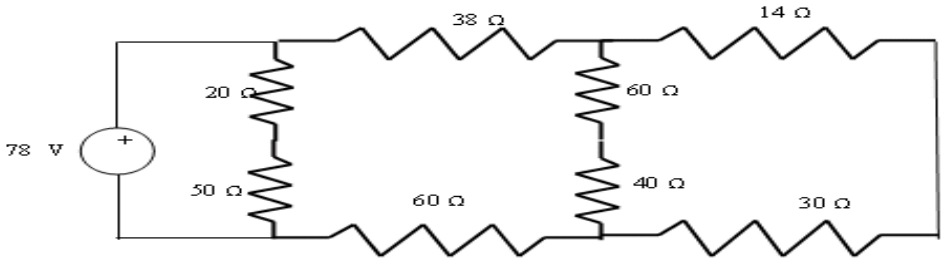


Fig.1

b) Find the current passing through 10Ω resistor shown in Fig.2. 7 Marks

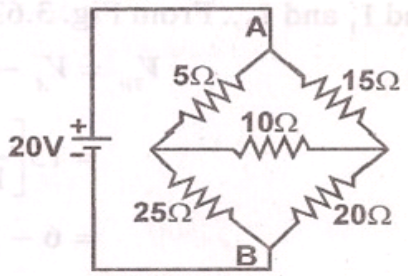


Fig.2

(OR)

2 a) State and explain Kirchoff's current law and Kirchoff's voltage law. 6 Marks

b) Use nodal analysis to find the voltage drop 'V_p' across 100Ω shown in Fig.3. 8 Marks

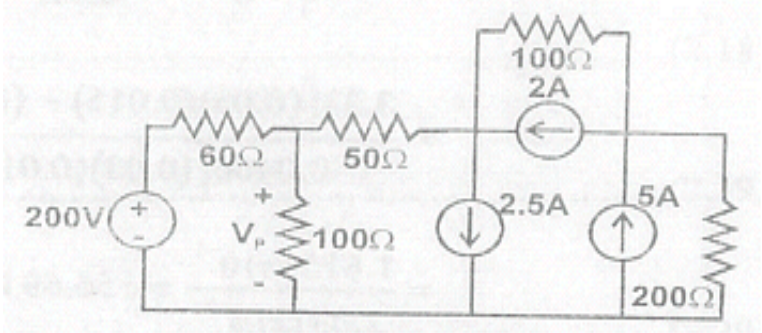


Fig.3

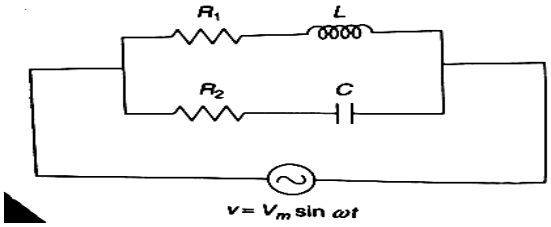
UNIT-II

3 a) Analyze the behavior of a series RC circuit excited by a sinusoidal voltage source. 7 Marks

b) A series circuit consumes 2kW at 0.8 power factor lag when connected to 230V, 50Hz supply. Calculate current kVA and kVAR. 7 Marks

(OR)

4 Determine the resonant frequency of the parallel circuit shown in fig. 4. 14 Marks



Fgi. 4

UNIT-III

5 A symmetrical 3-phase, 3-wire, 440V supply is connected to a star connected load. The impedances in each branch are: $\mathbf{Z_1=(2+j3)\Omega}$, $\mathbf{Z_2=(1-j2)\Omega}$, $\mathbf{Z_3=(3+j4)\Omega}$. Find its equivalent delta connected load, phase and line currents and the total power consumed in the circuits. 14 Marks

(OR)

6 a) A three phase balanced system supplies 110V to a delta connected load whose phase impedances are equal to **(3.54+j3.54)Ω.** Determine the line currents and draw its phasor diagram. 8 Marks

b) Three identical resistances are connected star fashion against a balanced three phase supply. If one of the resistance is removed, then how much power is to be reduced? 6 Marks

UNIT-IV

7 a) Derive the relation among self-inductance, mutual inductance and coefficient of coupling. 7 Marks

b) Obtain the equation for the total inductance when two coils are connected in: 7 Marks
i) Series aiding and opposing.
ii) Parallel aiding and opposing.

(OR)

8 a) Two long single layer solenoids have the same length and the same number of turns but are placed co-axially one within the other. The diameter of the inner coil is 8cm and that of the outer coil is 10cm. Calculate the co-efficient of coupling. 8 Marks

b) Explain the importance of dot convention in coupled circuits. 6 Marks

UNIT-V

9 a) State and explain Milliman's theorem with a suitable example. 7 Marks

b) Find the current 'I' in the circuit shown in Fig.5 using superposition theorem. 7 Marks

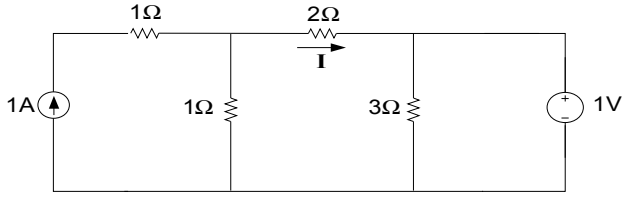


Fig.5

(OR)

10 a) State and explain Reciprocity theorem with a suitable example. 7 Marks

b) Find Norton's equivalent to the right of the terminal x-y for the circuit shown in Fig.6. 7 Marks

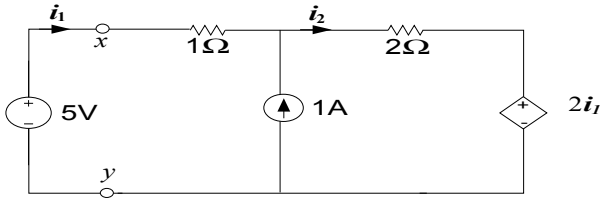


Fig.6

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

ELECTRICAL TECHNOLOGY

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	List out the classification of DC generators and explain them briefly.	8 Marks
	b)	A 30kW, 300V DC shunt generator has armature and field resistances of 0.05Ω and 100Ω respectively. Calculate the total power developed by the armature when, it delivers full load output.	6 Marks
		(OR)	
2	a)	Derive the torque equation of a DC motor.	7 Marks
	b)	A shunt motor operating on 230V takes 1a=6A at no load and runs at 1200 r.p.m. Take R_a = 0.25Ω. Find the speed and electromagnetic torque when the armature takes 36A with the same flux.	7 Marks

UNIT-II

3	a)	Explain how to draw the equivalent circuit of a single phase transformer.	8 Marks
	b)	Explain the various types of losses in a single phase transformer.	6 Marks
		(OR)	
4	a)	Explain the construction and working principle of a single phase transformer.	8 Marks
	b)	The maximum flux density in the core of a 250/3000V, 50Hz single phase transformer is 1.2 Wb/m². If the EMF per turn is 8V. Determine: i) Primary and secondary turns. ii) area of the core.	6 Marks

UNIT-III

5	a)	Derive the relation between phase and line quantities in three phase star connection.	8 Marks
	b)	Derive the expression for power in a three phase circuit.	6 Marks
		(OR)	
6	a)	What is meant by a balanced three phase system? Explain.	4 Marks
	b)	In a balanced three phase 400V circuit, the line current is 115.5A. When power is measured by two wattmeter method, one wattmeter reads 40KW and the other reads zero. What is the power factor of the load? If the power factor were unity and the line current the same what would be the reading of each watt meter?	10 Marks

UNIT-IV

7	a)	Describe the principle and operation of 3-φ induction motor.	7 Marks
	b)	Derive an EMF equation of an alternator.	7 Marks
		(OR)	
8	a)	Explain the effects of slip on rotor circuit of three phase induction motor.	7 Marks
	b)	Derive the condition for maximum torque of three phase induction motor.	7 Marks

UNIT-V

9	a)	Single phase induction motor is not self starting. Why?	7 Marks
	b)	Explain the principle of operation of split phase induction motor.	7 Marks
		(OR)	
10		Explain the applications of the following motors. i) Universal motor. ii) Stepper motor. iii) Shaded pole motor. iv) Capacitor run motor.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

NETWORK ANALYSIS

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Explain about series and parallel inductive and capacitive circuit. 8 Marks

b) The filament of a light in the circuit has a certain amount of resistance. The bulb operates with 120V and 0.8A of current, what is the resistance of its filament? 6 Marks

(OR)

2 a) Four equal resistances are available in a circuit. Derive the ratio of the equivalent resistances when they are connected in parallel and the ratio of the current through each element. 7 Marks

b) In the circuit shown in Fig. 1 find current 'I' in 10Ω and voltage across 2Ω resistor V_s. 7 Marks

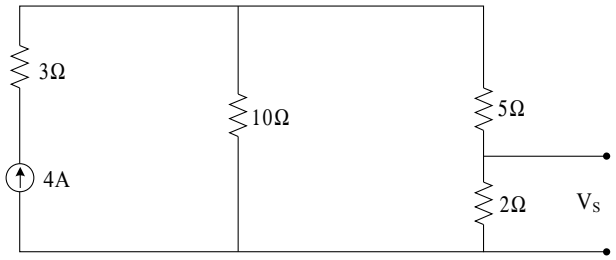

Fig. 1.

UNIT-II

3 a) Obtain the fundamental sinusoidal response of a series RL circuit. 7 Marks

b) What is locus diagram? Draw and explain current locus diagram for a series RC circuit with fixed resistance by deriving necessary expressions. 7 Marks

(OR)

4 Derive the expressions of resonant frequency, Quality factor and bandwidth of a series RLC resonance circuit with help of phasor diagrams. 14 Marks

UNIT-III

5 a) Obtain the Transient response of RC series circuit for sinusoidal excitation. 7 Marks

b) A series RC circuit has R=20Ω and C=100μF. A voltage v = 200 Sin 314t is applied at t=2.14msec. Obtain an expression for current. Find the value of current after time 1m sec from the switching instant. 7 Marks

(OR)

6 Determine the current equation for the circuit shown in Fig.2, if the switch is closed when φ=30^0. 14 Marks

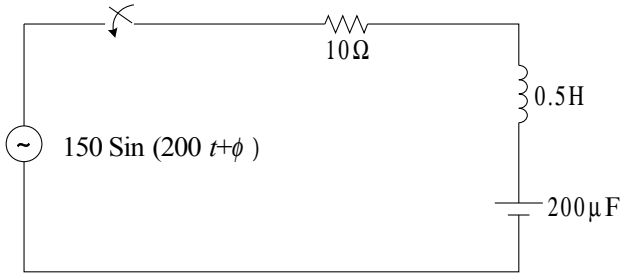

Fig. 2.

UNIT-IV

7 a) Derive the relations of h-parameters in terms of Y-parameters. 7 Marks

b) Explain about m-derived filter. 7 Marks

(OR)

8 Design a constant K-pass filter having cut-off frequency 205kHz and design resistance R_o=700Ω. Also find the frequency at which filter produces attenuation of 19.1db. Find its characteristic impedances and phase constant at pass band and stop band. 14 Marks

UNIT-V

9 a) State and explain compensation theorem with a suitable example. 7 Marks

b) Find the voltage across 2Ω resistor in Fig.3 using super position theorem. 7 Marks

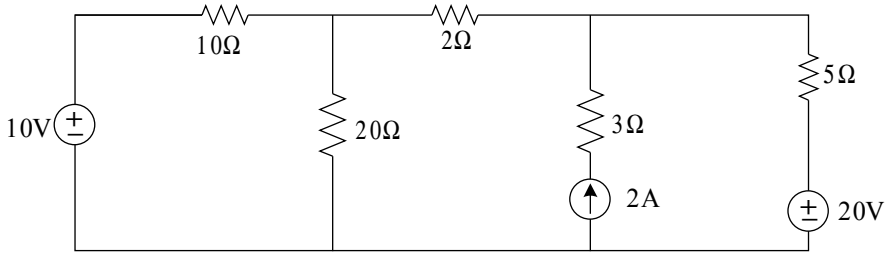

Fig. 3

(OR)

10 a) State and explain Reciprocity theorem. 6 Marks

b) Using compensation theorem, determine the current 'I' in the circuit shown in Fig4. 8 Marks

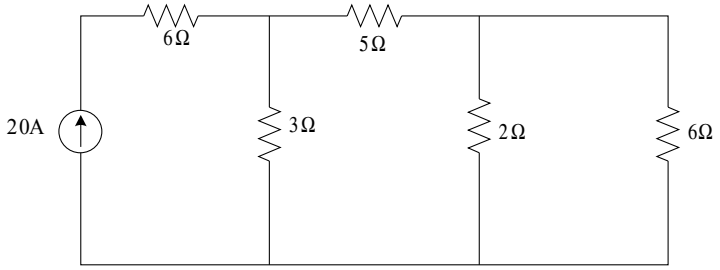

Fig.4.

CODE No.:14BT30233 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

BASICS OF ELECTRICAL AND MECHANICAL TECHNOLOGY

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

PART-A

UNIT-I

1	a)	Explain Kirchoff's laws with an example.	7 Marks
	b)	Obtain equivalent Delta when three equal resistances are connected in Star.	7 Marks
		(OR)	
2	a)	Define: (i) Active power. (ii) Reactive power. (iii) Apparent power. (iv) Power factor.	8 Marks
	b)	Write down the general rules related to wiring.	6 Marks

UNIT-II

3	a)	Explain the principle of operation of three phase induction motor.	7 Marks
	b)	Explain the operation of incandescent lamp with suitable diagram.	7 Marks
		(OR)	
4		List out types of earthing and explain them in detail. Also explain its importance.	14 Marks

PART-B

UNIT-III

5	a)	Sketch and describe the working of TIG welding.	7 Marks
	b)	List the applications of various welding processes.	7 Marks
		(OR)	
6	a)	Explain the various components of IC engine with a neat diagram.	7 Marks
	b)	Why does engine requires cooling and lubrication?	7 Marks

UNIT-IV

7		With a neat sketch, explain the working of Vapour compression refrigeration system.	14 Marks
		(OR)	
8	a)	Differentiate between a Refrigerator and an Air conditioner.	7 Marks
	b)	Define the following terms. i) Refrigerating effect. ii) Ice making capacity. iii) Coefficient of performance.	7 Marks

UNIT-V

9	a)	Explain the working principle of multi stage reciprocating air compressor.	7 Marks
	b)	Explain the need of various earth moving equipments with neat sketches.	7 Marks
		(OR)	
10	a)	Explain the working principle of single stage compressor with neat sketch.	7 Marks
	b)	Write short notes on the following: i) Concrete mixer. ii) Bull dozers.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit

All questions carry equal marks

UNIT-I

1	a)	Derive the expressions for energy stored in an inductor and capacitor.	6 Marks
	b)	Briefly explain about active and passive elements, lumped and distributed elements.	8 Marks

(OR)

2	a)	Three equal resistances are available. Derive the ratio of the equivalent resistances when they are connected in parallel and also the ratio of the current through each element when they are connected in parallel.	8 Marks
	b)	A resistor of 50Ω has a potential difference of 100V across it for 1 hour. Calculate power and energy consumed by resistor.	6 Marks

UNIT-II

3	a)	Obtain the sinusoidal response of series RLC circuit.	8 Marks
	b)	Derive the relation between poles, speed and frequency with respect to fundamental analysis.	6 Marks

(OR)

4	a)	Explain the production of alternating voltages with neat diagram.	10 Marks
	b)	Define phase and phase difference.	4 Marks

UNIT-III

5	a)	Derive the torque equation of a DC motor.	7 Marks
	b)	Explain the construction and working principle of transformer.	7 Marks

(OR)

6	a)	Explain the construction and working principle of three phase induction motor.	10 Marks
	b)	List out the applications of DC motors.	4 Marks

UNIT-IV

7	a)	Derive the expression of deflecting torque of a PMMC instrument with relevant diagram.	8 Marks
	b)	What are the different types of electrical instruments and list out their applications?	6 Marks

(OR)

8	a)	Briefly explain about essential requirements of Indicating instruments.	8 Marks
	b)	Explain the construction and working principle of moving iron attraction type instruments.	6 Marks

UNIT-V

9	a)	Explain the working of P-N junction diode.	7 Marks
	b)	An **a.c** voltage of peak value 20V is connected in series with a silicon diode and load resistance of 500Ω. If the forward resistance of diode is 10Ω, find: i) Peak current through diode. ii) Peak output voltage. What will be these values if the diode is assumed to be ideal?	7 Marks

(OR)

10	a)	Compare the characteristics of transistor amplifier in three configurations.	7 Marks

b) Explain the Cristal oscillator with neat diagrams. 7 Marks

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II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

BASIC ELECTRICAL ENGINEERING

[Computer Science and Engineering, Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 What are the basic circuit components? With circuit symbols and equations, explain each of them in detail. 14 Marks

(OR)

2 a) Derive the expression for Equivalent capacitance 'C_{eq}' when three capacitances C_1, C_2, C_3 are connected in series. 8 Marks

b) A wire of length 50cm moves in a direction at right angles to its length at 40m/s in a uniform magnetic field of density 1.5wb/m^2. Calculate the electro motive force induced in the conductor when the direction of motion is; 6 Marks
(i) perpendicular to the field.
(ii) inclined at 45 degrees to the direction of the field.

UNIT-II

3 a) What is *Power factor*? What is its significance? 8 Marks

b) An alternating voltage (80 + j60) V is applied to a circuit and current flowing is **(-4 + j10) A**. Find: i) impedance of the circuit ii) the power factor. 6 Marks

(OR)

4 A series RC circuit with R = 4.0 x $10^3\Omega$ and C = 0.40μF is connected to an AC voltage source V(t) = (100 V)sinωt , with ω = 200 rad/s . 14 Marks
i) What is the rms current in the circuit?
ii) What is the phase between the voltage and the current?
iii) Find the power dissipated in the circuit.
iv) Find the voltage drop both across the resistor and the capacitor.

UNIT-III

5 a) Derive EMF equation of a DC generator. 6 Marks

b) A 4-pole, lap wound DC motor has 540 conductors. Its speed is found to be 1000 r.p.m. The flux per pole is 25mWb. It is connected to 230 Volts dc supply. Armature resistance Ra is 0.8Ω. Calculate induced emf and armature current. 8 Marks

(OR)

6 a) Explain with a neat sketch, the constructional details of a DC machine. 7 Marks

b) A DC generator is found to develop an armature voltage of 200V. If the flux is reduced by 25% and speed is increased by 40%, calculate the armature generated voltage. 7 Marks

UNIT-IV

7 A 100KVA 1-phase transformer has full load primary current of 400A and total resistance referred to primary is 0.006. If the iron loss amounts to 500W, find the efficiency at full load and half load at 14 Marks
i) Unity power factor ii) 0.8 power factor.

(OR)

8		What are different types of Induction motors? With a neat diagram, explain the constructional details of a three phase induction motor.	14 Marks

UNIT-V

9		What is the function of damping system in a measuring instrument? With necessary diagrams, discuss about various methods of damping available.	14 Marks

(OR)

10	a)	Explain about the construction and operation of Repulsion type Moving Iron instruments.	8 Marks
	b)	Write short notes on Digital Multimeters.	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

FOUNDATIONS OF ELECTRICAL ENGINEERING

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define the terms Electrical network, Electrical circuit, Branch, Node, Mesh and Voltage.	6 Marks
	b)	Derive the relationship to express three star connected resistances into equivalent delta.	8 Marks
		(OR)	
2	a)	Two storage batteries A and B are connected in parallel to supply a load of 0.28Ω. The open circuit e.m.f of A is 11.2V and that of B is 12.1V. The internal resistances are 0.058Ω and 0.056Ω respectively. Determine current supplied to load.	8 Marks
	b)	Define the terms Resistance, Inductance and Capacitance and explain their respective voltage equations.	6 Marks

UNIT-II

3	a)	Explain how average value and r.m.s value can be determined for a given wave form.	7 Marks
	b)	A RL circuit with R=35Ω and L=0.3mH has a voltage v = 135sin 270t (V). Find the power p and the r.m.s power p_{rms} over one cycle.	7 Marks
		(OR)	
4	a)	Define the terms complex power, real power and reactive power.	7 Marks
	b)	Explain why **j** operator is used in circuit analysis.	7 Marks

UNIT-III

5	a)	Explain with a neat sketch the construction of a DC machine.	8 Marks
	b)	In a particular DC machine if P = 8, Z = 380, N = 298 r.p.m and Φ=100 mWb. Calculate generated e.m.f for Lap winding.	6 Marks
		(OR)	
6	a)	Explain the working principle of DC motor.	8 Marks
	b)	A 250V D.C shunt motor takes a line current of 20A Resistance of shunt field winding is 190Ω and the resistance of armature is 0.3Ω. Find the armature current and the back e.m.f.	6 Marks

UNIT-IV

7	a)	Derive the expression for induced e.m.f of single phase transformer.	8 Marks
	b)	Discuss about the various losses encounter in single phase transformer.	6 Marks
		(OR)	
8	a)	Explain the constructional details of three-phase Induction Motor.	8 Marks
	b)	Discuss about the principle operation of syncro.	6 Marks

UNIT-V

9	a)	Discuss various types of closed loop systems with illustrations.	8 Marks
	b)	Explain about linear and non linear systems with illustrations.	6 Marks
		(OR)	
10	a)	Determine Transfer function of a series R-C circuit by considering unit step input and output across capacitor.	6 Marks

b) Discuss various block diagram reduction rules to determine transfer function. 8 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

STRENGTH OF MATERIALS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Define the terms: 6 Marks
i) Normal stress ii) Tangential stress iii) Ductility iv) Brittleness.

b) A flat steel plate is of trapezoidal form has a uniform thickness (t). It's width at one end is 'a' and at the other end is 'b' and its length is 'L'. Determine its elongation under an axial pull 'P'. 8 Marks

(OR)

2 Draw the Mohr's stress circle for direct stresses of 65MN/m^2 (tensile) and 35MN/m^2 (compressive). Find the magnitude and direction of the resultant stress on planes makes angles of 20^0 and 65^0 with the plane of the first principal stress. Find also the normal and tangential stresses on these planes. Compare them with the analytical method. 14 Marks

UNIT-II

3 a) Define statically determinate and statically indeterminate beams. Give examples. 4 Marks

b) A T-beam having flange 170mm x 30mm and web 30mm x 180mm is simply supported over a span of 7.5m. It carries a uniformly distributed load of 7kN/m including self weight over its entire span, together with a point load of 50kN at mid span. Find the maximum tensile and compressive stresses occurring in the beam section and sketch the stresses across the section. 10 Marks

(OR)

4 a) Is it possible to predict the location and mode of failure of a beam subjected to a given loading? Is it necessary to draw the SF and BM diagram before prediction the same? 4 Marks

b) A simply supported beam of length 10m rests on supports 7m apart, the right hand end is overhanging by 3m and the left hand end is overhanging by 2m. The beam carries a uniformly distributed load of 7kN/m over the entire length. It also carries two point loads of 6kN and 8kN at each end of the beam. The load of 6kN is at the extreme left of the beam, whereas the load of 8kN is at the extreme right of the beam. Draw the SF and BM diagrams for the beam and find the points of contra flexure. 10 Marks

UNIT-III

5 a) State the assumptions involved in the theory of simple bending. 4 Marks

b) A simply supported beam AB, 10m long carrying a point load 4kN at 3m from A and a point load 3kN at 6m from A and a uniform distributed load of 3kN/m between the point loads. Determine the position and magnitude of maximum bending moment. Draw the SF and BM diagrams. 10 Marks

(OR)

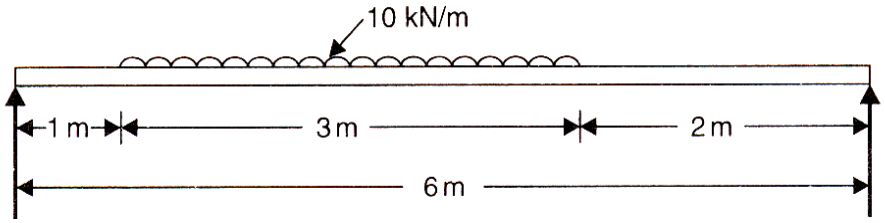
6	a)	Derive an expression for the shear stress at any point in a circular section of a beam, which is subjected to a shear force F. Sketch the variation of shear stress,	6 Marks
	b)	A timber beam 150mm wide and 260mm deep supports uniformly distributed load of intensity w kN/m length over a span of 2.5m. if the safe stresses are 27MPa in bending and 2MPa in shear. Calculate the safe intensity of the load which can be supported by the beam.	8 Marks

UNIT-IV

7		A beam AB of length 8m is simply supported at its ends and carries two point loads of 50KN and 40KN at a distance of 2m and 5m respectively from left support A. Determine, deflection under each load, maximum deflection and the position at which maximum deflection occurs. Take $E = 2 \times 10^5$ N/mm^2 and $I = 8.5 \times 10^6$mm^4.	14 Marks

(OR)

8	a)	Derive the slope and deflection through double integration method for cantilever beam concentrated load at free end.	6 Marks
	b)	A beam of length of 6m is simply supported at its ends. It carries a uniformly distributed load of 10KN/m as shown in figure. Determine the deflection of the beam at its mid-point and also the position and the maximum deflection. Take EI = 4.5×10^8N/mm^2.	8 Marks



UNIT-V

9	a)	Deduce the general equations for circumferential and radial stress developed in a thick spherical shell. Deduce the simplified expressions for their maximum values when acted upon by an internal pressure only.	7 Marks
	b)	A thin cylinder 1.5m internal diameter and 5m long is subjected to an internal pressure of 2N/mm^2. If the maximum stress is limited to 160N/mm^2, find the thickness of the cylinder. E = 200kN/mm^2 and Poisson's ratio = 0.3. Also find the changes in diameter, length and volume of the cylinder.	7 Marks

(OR)

10	a)	What is mean by circumferential stress and longitudinal stress? Distinguish between thick and thin cylinders.	6 Marks
	b)	Steel cylindrical shell 3m long which is closed at its ends, had an internal diameter of 1.5m and a wall thickness of 20mm. Calculate the circumferential and longitudinal stress induced and also the change in dimensions of the shell if it is subjected to an internal pressure of 1.0N/mm^2. Assume the modulus of elasticity and Poisson's ratio for steel as 200kN/mm^2 and 0.3 respectively.	8 Marks

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II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

MATERIALS SCIENCE AND METALLURGY

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Show that the packing efficiency of FCC and HCP unit cells are 74%.	7 Marks
	b)	Mark the planes (100), (110) and (111) in a cubic lattice. Mark all the directions that can exist on these planes and write the corresponding Miller indices of direction.	7 Marks
		(OR)	
2	a)	Define atomic packing factor. Calculate atomic packing factor for FCC.	7 Marks
	b)	Explain Henry's intercept method in grain size measurement.	7 Marks

UNIT-II

3	a)	Explain the phase diagram of binary isomorphous alloy system.	7 Marks
	b)	Explain Hume-rothery rules.	7 Marks
		(OR)	
4	a)	Explain the solidification of pure metals.	7 Marks
	b)	Draw an equilibrium diagram that illustrates existence of a peritectic reaction.	7 Marks

UNIT-III

5	a)	Explain any two types of case hardening, with sketches.	7 Marks
	b)	Briefly explain the TTT diagram for eutectoid steel.	7 Marks
		(OR)	
6	a)	What is retained austenite? Why is it not desirable?	7 Marks
	b)	Write short notes on the following. i) Martempering. ii) Austempering.	7 Marks

UNIT-IV

7	a)	Mention at least three different types of cast irons. How do they differ with respect to composition and structure?	7 Marks
	b)	Write short notes on aluminum alloys.	7 Marks
		(OR)	
8	a)	What is high speed steel? State and explain the important properties of the two types of high speed steels.	7 Marks
	b)	What are the general requirements of the tool steels? How would you select the composition of steel for a particular application?	7 Marks

UNIT-V

9		What do you understand by powder metallurgy? What are the main stages of powder metallurgy process? Explain.	14 Marks
		(OR)	
10	a)	Define composite. What are the different types of matrices used in composite? Explain.	7 Marks
	b)	Differentiate GFRP and CFRP with suitable examples.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

THERMODYNAMICS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain thermodynamic equilibrium.	5 Marks
	b)	Differentiate between the following with suitable examples i) System and control volume. ii) Intensive and extensive properties. iii) Path and point functions.	9 Marks

(OR)

2	a)	A mass of 1.5kg of air is compressed in a quasi-static process from 0.1MPa to 0.7MPa for which pv = constant. The initial density of air is 1.16kg/m^3. Find the work done by the piston to compress the air.	7 Marks
	b)	What are different forms of work energy? Explain each briefly.	7 Marks

UNIT-II

3	a)	What is a steady flow process? Write the steady flow energy equation and explain the various terms in it.	7 Marks
	b)	Represent schematically heat engine, heat pump and refrigerator. Give their performance.	7 Marks

(OR)

4	a)	State and prove Carnot's theorem.	6 Marks
	b)	A heat engine is used to drive a heat pump. The heat transfers from the heat engine and from the heat pump are used to heat the water circulating through the radiators of a building. The efficiency of the heat engine is 27% and the COP of the heat pump is 4. Evaluate the ratio of the heat transfer to the circulating water to the heat transfer to the heat engine.	8 Marks

UNIT-III

5	a)	What is Clausius Inequality? Explain the Principle of Increase of Entropy for an adiabatic system.	7 Marks
	b)	A system at 500K receives 7200kJ/min from a source at 1000K. The temperature of atmosphere is 300K. Assuming that the temperatures of system and source remain constant during heat transfer, find out; i) The entropy produced during heat transfer. ii) The decrease in available energy after heat transfer.	7 Marks

(OR)

6	a)	Define: (i) Available energy (ii) Availability (iii) Effectiveness	9 Marks
	b)	Define entropy and prove that it is a property of the system.	5 Marks

UNIT-IV

7	a)	10kg of water at 45°C is heated at a constant pressure of 10 bar until it becomes superheated vapour at 300°C. Find the change in volume, enthalpy, internal energy and entropy.	8 Marks
	b)	Deduce Maxwell's relations.	6 Marks

(OR)

8 a) Explain how real gases deviate from an ideal gas behaviour. 4 Marks

b) $0.1m^3$ of hydrogen initially at 1.2MPa, 200°C undergoes a reversible isothermal expansion to 0.1MPa. Find: 10 Marks

i) the work done during the process.

ii) the heat transferred.

iii) the entropy change of the gas.

UNIT-V

9 a) What is an air standards cycle? Why are such cycles conceived? 4 Marks

b) An engine working on the otto cycle is supplied with air at 0.1Mpa, 35^0C. The compression ratio is 8, heat supplied is 2100KJ/Kg. Calculate the maximum pressure and temperature of the cycle, the cycle efficiency and the mean effective pressure. For C_p of air = 1.005 KJ/Kg K, C_v = 0.718 KJ/Kg K, R = 0.287 KJ/Kg K. 10 Marks

(OR)

10 Derive an expression for the thermal efficiency of diesel cycle and draw P-V and T-S diagrams. 14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

MANUFACTURING TECHNOLOGY-I

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the objectives of designing a gating system? Also distinguish between pressurized and un-pressurized gating systems.	7 Marks
	b)	Explain the step-by-step procedure of estimating the clay content in moulding sand.	3 Marks
	c)	Calculate the size of a cylindrical riser (height = diameter) necessary to feed a steel slab casting 25 x 25 x 5cm with a side riser, casting poured horizontally into the mould. Assume constants: a = 0.10, b = 0.03, c = 1.0.	4 Marks

(OR)

2	a)	List and explain various types of patterns with their uses.	7 Marks
	b)	What is the significance of pattern allowance? Explain how pattern allowances are calculated in different cases.	7 Marks

UNIT-II

3		Explain the steps involved in investment casting process and list advantages, limitations and applications of this process.	14 Marks

(OR)

4	a)	Explain different zones in the Cupola furnace while producing steel using a sketch.	7 Marks
	b)	Explain the permanent mould casting processes using sketches.	7 Marks

UNIT-III

5	a)	How do you classify welding processes? List merits, demerits and applications of various welding processes.	7 Marks
	b)	Outline the design steps involved in the design of welded joints.	7 Marks

(OR)

6	a)	What are the unique features of gas welding process over other welding methods? Suggest different types of flames to meet the user requirements.	7 Marks
	b)	List the features of soldering, brazing and adhesive bonding processes. Also list their merits, demerits and applications.	7 Marks

UNIT-IV

7	a)	Distinguish between gas and arc welding.	5 Marks
	b)	What are the advantages of welding?	4 Marks
	c)	Explain percussion welding.	5 Marks

(OR)

8		Explain the principle of operation of submerged arc wielding. List its advantages.	14 Marks

UNIT-V

9 List and explain various welding defects giving sources of these defects and remedies. 14 Marks

(OR)

10 a) Distinguish between EBM and LBM processes. 7 Marks

b) What are the various non-destructive testing methods to detect welding defects? Explain. 7 Marks

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II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

PROBABILITY AND STOCHASTIC PROCESSES

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Box-1 contains 1000 bulbs of which 10% are defective. Box-2 contains 2000 bulbs of which 5% are defective. Two bulbs are picked from a randomly selected box. (i) find the probability that both bulbs are defective (ii) assuming that both are defective, find the probability that they came from box-1. 7 Marks

b) A pair of dice is rolled 10 times. Find the probability that "seven" will come at least once. 7 Marks

(OR)

2 a) If there are 'r' successes in 'n' independent Bernouli trials, what is the probability of a success on the ith trial? 5 Marks

b) Show that if the events A1,A2…An are independent and Bi = Ai, then events B1, B2,…Bn are also independent. 5 Marks

c) A call occurs at time '*t*' is random point in the interval (0, 10). Find p (6 <= t<= 8). 4 Marks

UNIT-II

3 a) Define random Variable, find the characteristic function of the random variable X having density function $f(x) = e^{-x}, -\infty < x < \infty$. 7 Marks

b) A random variable x has p.d.f f(x) given by $f(x) = \begin{cases} cxe^{x}; if\ x > 0 \\ 0; if x \le 0 \end{cases}$. Find the value of c and C.D.F of *x*. 7 Marks

(OR)

4 a) State four properties of conditional density function. 7 Marks

b) Find the MGF of a Binomial distribution and hence find mean and variance. 7 Marks

UNIT-III

5 a) Write at least three properties of the following functions of any two random variables X and Y i)joint distribution $F_{X,Y}$ ii)Marginal Distribution Function. 7 Marks

b) If X be a weighted sum of 'N' random variables '*Xi*' is given by $X \sum {}_{i=1}^{N} \alpha ixi$. Find out the mean and variance of 'X'. 7 Marks

(OR)

6 a) Joint pdf is $f(x, y) = k(1+xy) \mid x \mid < 1, \mid y \mid < 1$
$= 0$ otherwise.
find f (x/y). 7 Marks

b) Given $f(x, y) = 2(x + 0.5y)^2, 0 < x < 2\ 0 < y < 3$
$= 0$ 43 Elsewhere
Find all the first and second order moments. 7 Marks

UNIT-IV

7	a)	Explain: i) Ergodic theorem. ii) Ergodic processes.	7 Marks
	b)	Prove that the autocorrelation function is maximum at the origin.	7 Marks
		(OR)	
8	a)	Derive the relation between Auto Correlation Function and PSD.	7 Marks
	b)	For a random process X(t) = Acos (wt + q)+B sinwt where A and B are two uncorrelated random variables with zero mean and equal variances and **w** is a real constant. Find the ACF of X(t) and hence its PSD.	7 Marks

UNIT-V

9	a)	Define thermal noise and explain its relationship to the bandwidth and temperature.	7 Marks
	b)	An amplifier with gain = 30 dB and BN = 25kHz is found to have T_0 = 120K. Find Te and Noise figure.	7 Marks
		(OR)	
10	a)	Explain the difference between correlated and uncorrelated noise.	6 Marks
	b)	Discuss and explain Noise factor and Noise figure equivalent noise temperature.	8 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

SEMICONDUCTOR DEVICES AND CIRCUITS

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the V-I characteristics of Diode of Diode under forward and reverse bias.	10 Marks
	b)	An **a.c** voltage of peak value 20.7V is connected in series with a silicon diode and a load resistance of 490Ω.The forward resistance of the diode is 10Ω. Calculate: i) peak current through the diode and ii) peak voltage output voltage. What will be these values if the diode is assumed to be ideal?	4 Marks

(OR)

2	a)	Discuss the working of a Capacitive filter with: i) a half-wave rectifier. ii) full-wave rectifier.	10 Marks
	b)	A 230V.60Hz voltage is applied to the primary of 5:1 step down, center tapped transformer used in a FWR having a load of 900Ω. If the diode resistance and the secondary coil resistance together has a resistance of 100Ω, determine: i) **d.c** voltage across the load. ii) **d.c** current flowing through the load. iii) **d.c** power delivered to the load. iv) PIV across each diode. v) Ripple voltage and frequency.	4 Marks

UNIT-II

3	a)	Draw the schematic of an NPN transistor indicating the various current components and explain how each one of them arises.	7 Marks
	b)	Determine the quiescent currents and the collector to emitter voltage for a germanium transistor with $\beta = 50$ in self biasing arrangement. Draw the circuit with a given component value with $V_{CC} = 20V$, $R_C = 2K$, $Re = 100\Omega$, $R_1 = 100K$ and $R_2 = 5K$. Also find out stability factor.	7 Marks

(OR)

4	a)	Draw the circuit diagram of a collector to base bias circuit of CE amplifier and derive expression for S.	6 Marks
	b)	Explain why $\alpha < 1$ and $\beta > 1$ for a given transistor.	4 Marks
	c)	Discuss about the purpose of **d.c** and **a.c** load lines.	4 Marks

UNIT-III

5	a)	Explain the h-parameter equivalent circuit of a transistor applicable to any configuration.	7 Marks
	b)	Derive expressions for current gain, input impedance, output impedance and voltage gain of the CC configuration using hybrid parameter equivalent circuit.	7 Marks

(OR)

6	a)	Analyze the CE amplifier using approximate hybrid model.	8 Marks
	b)	Write the comparisons of CE, CB and CC configurations.	6 Marks

UNIT-IV

7	a)	Explain the pinch-off voltage, V-I characteristics of JFET.	6 Marks
	b)	With neat diagram, explain the operation of MOSFET in enhancement mode.	8 Marks

(OR)

8	a)	Explain the common drain amplifier and derive expression for gain of the amplifier.	8 Marks
	b)	Write the comparisons of BJT and JFET.	6 Marks

UNIT-V

9	a)	With the schematic diagram of an UJT showing the inter-base resistances and the input diode, explain the working of it. Mention any three applications of UJT.	7 Marks
	b)	Explain how tailoring of doping profiles improve the Varactor diode operation. Mention any three applications of it.	7 Marks

(OR)

10	a)	How does a Tunnel diode differ from other semiconductor diodes in its fabrication? Describe with relevant theory the energy band structure and forward-reverse characteristics of a Tunnel diode.	7 Marks
	b)	Explain the working principle of SCR with the help of V-I characteristics. Mention its applications.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

ELECTRONIC DEVICES AND CIRCUITS

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the V-I characteristics of pn junction diode in forward and reverse bias.	7 Marks
	b)	Explain the factor by which the current will increase in a silicon diode operating at a forward voltage of 0.4V, when the temperature is raised from 25^0C to 124^0C.	7 Marks
		(OR)	
2	a)	Derive an expression for the ripple factor in a full-wave rectifier using inductor filter.	7 Marks
	b)	Determine the value of ripple factor in full-wave rectifier operating at 50Hz with a 100μF capacitor filter and 100Ω load.	7 Marks

UNIT-II

3	a)	Explain early effect and its consequences.	7 Marks
	b)	Explain the working of CE transistor configuration with input and output characteristics.	7 Marks
		(OR)	
4	a)	Determine the h-parameters from the characteristics of CB configuration.	7 Marks
	b)	Draw a circuit which uses a diode to compensate for changes in I_{CO}. Explain how stabilization is achieved in the circuit.	7 Marks

UNIT-III

5	a)	Explain in detail the working of JFET and draw its drain and transfer characteristics.	10 Marks
	b)	Compare JFET and MOSFET.	4 Marks
		(OR)	
6	a)	What are the differences between BJT and JFET?	6 Marks
	b)	Explain how FET acts as voltage variable resistor.	8 Marks

UNIT-IV

7	a)	Draw the circuit diagram of a current series feedback amplifier and derive expressions for voltage gain with and without feedback.	6 Marks
	b)	Derive an expression for frequency of oscillation of colpitt's oscillator.	8 Marks
		(OR)	
8	a)	Explain in detail about the different feedback topologies.	6 Marks
	b)	Derive an expression for frequency of oscillation for RC phase shift oscillator.	8 Marks

UNIT-V

9	a)	Explain the construction and working of Silicon control rectifier.	8 Marks
	b)	Explain Uni-junction Transistor as Relaxation Oscillator.	6 Marks
		(OR)	
10	a)	What are the applications of Silicon control rectifier? Explain briefly.	6 Marks
	b)	Explain the construction and working of Schottky barrier diode.	8 Marks

CODE No.:14BT30501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

DATA STRUCTURES

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	Write an algorithm to delete a node in a doubly linked list.	14 Marks
	(OR)	
2	What are the applications of lists and write an algorithm to search for an element in the list?	14 Marks

UNIT-II

3	What is a stack? Explain various operations on a stack.	14 Marks
	(OR)	
4	Write an algorithm for converting infix expression to postfix form.	14 Marks

UNIT-III

5	Define binary tree. Write recursive methods for the Binary Tree traversals and explain.	14 Marks
	(OR)	
6	Show each step of AVL tree built from a sequence of insertions corresponding to the following keys. 44, 17, 32, 78, 50, 54, 62, 48.	14 Marks

UNIT-IV

7	What is a B* tree and B^+ tree illustrate with examples?	14 Marks
	(OR)	
8	Explain about Breadth First Search with an example.	14 Marks

UNIT-V

9	Write an algorithm to implement Quick Sort and write its efficiency.	14 Marks
	(OR)	
10	Explain about any two hashing methods with examples.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

DIGITAL LOGIC DESIGN

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Convert the given Binary number 11011101 in i) BCD ii) HEXADECIMAL iii) DECIMAL	8 Marks
	b)	What is a 2's Complement explain it with an example.	6 Marks
		(OR)	
2	a)	What is canonical form? Explain different canonical forms with an example.	7 Marks
	b)	Draw the logic diagram for the given Boolean expression $F = A\bar{B} + \bar{C}D + ABC$.	7 Marks

UNIT-II

3	a)	Simplified the Boolean Function $F(A, B, C, D) = \Sigma(0,2,5,8,9,13,15)$. And don't care condition $D(A, B, C, D) = \Sigma(1,7,14)$	9 Marks
	b)	Implement the above simplified function using NAND, NOR Gates.	5 Marks
		(OR)	
4		Obtained the simplified Expression in sum of products for the following. i) $F(x,y,z) = \Sigma(2,3,6,7)$ ii) $F(w,x,y,z) = \Sigma(2,3,12,1314,15)$ iii) $F(A,B,C,D) = \Sigma(4,6,7,15)$	14 Marks

UNIT-III

5	a)	Design a 4 bit Carry Look ahead Adder circuit.	7 Marks
	b)	Design a 4 bit BCD Adder using Full Adder circuits	7 Marks
		(OR)	
6	a)	a) Implement Half Adder using 5 NAND gates	7 Marks
	b)	b) Implement Full Subtractor using NAND gates only.	7 Marks

UNIT-IV

7	a)	Explain different types of Shift registers.	7 Marks
	b)	Design a 4-bit Ring Counter using T- flip flops and draw the circuit diagram.	7 Marks
		(OR)	
8		Describe the operation of the SR Latch using NAND gate with the help of truth table, transition table and the circuit.	14 Marks

UNIT-V

9		Write short notes on the following ROM variants. i) M-ROM ii) P-ROM iii) EPROM iv) EEPROM	14 Marks
		(OR)	
10	a)	Write a brief notes on memory decoding.	7 Marks
	b)	Explain the functioning of any two sequential programmable devices.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

DISCRETE MATHEMATICAL STRUCTURES

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Show that $\neg(P \vee Q) \Leftrightarrow \neg P \wedge \neg Q$.	7 Marks
	b)	Obtain principal conjunctive normal form of $(\neg P \rightarrow R) \wedge (Q \Leftrightarrow P)$.	7 Marks
		(OR)	
2	a)	Show that $R \rightarrow S$ is a valid conclusion from the premises $P \rightarrow (Q \rightarrow S), \neg R \vee P$ and Q.	7 Marks
	b)	Prove that $(\exists x)(P(x) \wedge Q(x)) \Rightarrow (\exists x) P(x) \wedge (\exists x)\ Q(x)$.	7 Marks

UNIT-II

3	a)	Give an example of a relation which is symmetric, antisymmetric, compatibility and transitive.	7 Marks
	b)	What is poset? Draw the Hasse diagram of positive divisors of 210.	7 Marks
		(OR)	
4	a)	Explain the properties of Binary Relation with examples.	7 Marks
	b)	Let Z={-2,-1,0,1,2,3,…..} and Relation R is defined as R={(x, y)/x - y is divisible by 3}, find the relations on Z.	7 Marks

UNIT-III

5	a)	In a monoid show that the set of all left invertible element form a sub monoid.	7 Marks
	b)	Show that if every element in a group is its own inverse, then the group is an abelian group.	7 Marks
		(OR)	
6	a)	**(G,*)** is a group and **(a, b)€G** then show that $(a * b)^{-1} = b^{-1} * a^{-1}$.	7 Marks
	b)	Every finite group of order "n" is isomorphic to a permutation group of degree 'n' prove it.	7 Marks

UNIT-IV

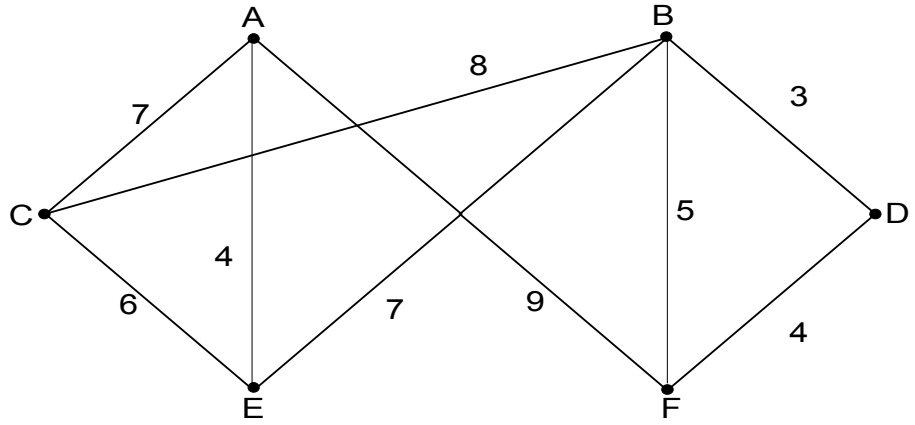
7	a)	In $(1 + x^5 + x^9)^{10}$ find the coefficient of x^{23} and x^{32}.	7 Marks
	b)	Compute the number of six letter combinations of the letter of English alphabet. If no letter is to appear in the combination more than 2 times.	7 Marks
		(OR)	
8	a)	Solve the Recurrence Relation $a_n - 9a_{n-1} - 26a_{n-2} - 24a_{n-3} = 0$ where $a_0=0$, $a_1=1$ and $a_2=10$.	7 Marks
	b)	How many ways can 5 day's be chosen from each of the 12 months of an ordinary year of 365 day's.	7 Marks

UNIT-V

9	a)	Define with examples: (i) Graph (ii) Degree of a vertex	7 Marks
	b)	Prove that a complete graph K_n is planar if $f\ n \leq 4$.	7 Marks

(OR)

10 a) Define Minimal spanning tree and find the minimal spanning tree of the following graph by Kruskal's Algorithm. 7 Marks



b) If G is a connected plane graph, prove that $|V| - |E| + |R| = 2$. 7 Marks

CODE No.: 16BT3BS01 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular/Supplementary Examinations November - 2018

PROBABILITY DISTRIBUTIONS AND STATISTICAL METHODS

[Civil Engineering, Mechanical Engineering, Computer Science and Engineering, Information Technology, Computer Science Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Define mathematical expectation of discrete and continuous random variables. CO1 7 Marks

b) A random variable X has the following probability function CO4 7 Marks

X	-2	-1	0	1	2	3
P(X)	0.1	K	0.2	2K	0.3	K

Determine: (i) K (ii) mean (iii) standard deviation (iv) variance.

(OR)

2 a) Five defective bolts are accidentally mixed with 20 good ones. Find the probability distribution of the number of defective bolts, if four bolts are drawn at random from this lot and also find its mean. CO5 7 Marks

b) If the probability density function of a random variable is given by CO4 7 Marks

$$f(x) = \begin{cases} x, \ for \ 0 < x < 1, \\ 2 - x, for \ 1 \le x < 2 \\ 0, elsewhere \end{cases}$$

Find the probabilities that a random variable having this probability density will take on a value (i) between 0.2 and 0.8 (ii) between 0.6 and 1.2.

UNIT-II

3 a) Assume that 50% of all engineering students are good in Mathematics. Determine the probabilities that among 18 engineering students: CO4, CO5 7 Marks

i) Exactly 10
ii) At least 10 and
iii) At most 8, are good in Mathematics.

b) If X is a Poisson variate such that P(X=0) = P(X=2) + 3P(X=4). Find the (i) mean of X (ii) P(X<2). CO4 7 Marks

(OR)

4 a) Fit a binomial distribution to the following data. CO4 7 Marks

X	0	1	2	3	4
f	28	62	46	10	4

b) In a sample of 1000 cases, the mean of a certain test is 14 and standard deviation is 2.5. Assuming the distribution is to be normal, find (i) how many students score between 12 and 15 (ii) how many score above 18. CO4 7 Marks

UNIT-III

5 The following figures give the number of defectives in 20 samples, containing 2000 items. 425, 430, 216, 341, 225, 322, 280, 306, 337, 305, 356, 402, 216, 264, 126, 409, 193, 280, 326, 389. Calculate the values for central line and the control limits for np-chart (Number of defective chart). CO3 14 Marks

(OR)

6 Price indices of cotton and wool are given below for the 12 months of a year. Obtain the equations of regression between the indices CO2, CO5 14 Marks

Price index of cotton(X)	78	77	85	88	87	82	81	77	76	83	97	93
Price index of wool (Y)	84	82	82	85	89	90	88	92	83	89	98	99

UNIT-IV

7 a) Explain briefly about different methods of sampling. CO1 7 Marks

b) A population consists of 5 observations 3, 6, 9, 15 and 27. Consider all possible samples of size two which can be drawn without replacement from this population. Find (i) the mean and standard deviation of the population (ii) the mean of the sampling distribution of mean. CO2, CO5 7 Marks

(OR)

8 a) Explain briefly about: CO1 7 Marks

i) Test of Hypothesis. ii) Null and alternate hypothesis.

iii) Errors of sampling.

b) On the basis of their total scores, 200 candidates of civil service examination are divided into two groups, the upper 30% and the remaining 70%. Consider the first question of the examination, among the first group 40 had the correct answer whereas among the second group, 80 had the correct answer. On the basis of these results, can one conclude that the first question is not good at discriminating ability of the type being examined here? CO2, CO5 7 Marks

UNIT-V

9 a) A random sample of six steel beams has a mean compressive strength of 58,392psi with a standard deviation of 648psi. Use this information and the level of significance of 0.05 to test whether the true average compressive strength of steel beam from which this sample came is 58,000psi. Assume normality. CO4 7 Marks

b) The measurements of the output of two units have given the following results. Assuming that both samples have been obtained from normal populations at 10% significant level, test whether the two populations have the same variance? CO4 7 Marks

Unit A	14.1	10.1	14.7	13.7	14.0
Unit B	14.0	14.5	13.7	12.7	14.1

(OR)

10 Given the following contingency table for hair color and eye color. Find the value of chi-square. Is there good association between the two? CO4 14 Marks

		Hair Color			Total
		Fair	Brown	Black	
Eye Color	Blue	15	5	20	40
	Grey	20	10	20	50
	Brown	25	15	20	60
Total		60	30	30	150

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular/Supplementary Examinations November - 2018

SPECIAL FUNCTIONS AND COMPLEX ANALYSIS

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Evaluate $\int_0^\infty e^{-x}\, x^{\frac{1}{2}} dx$. CO4 7 Marks

b) Compute (i) $\beta\left(\frac{1}{4}, \frac{3}{4}\right)$ and (ii) $\Gamma(2.5)\ \Gamma(3.5)$ CO4 7 Marks

(OR)

2 a) Show that $J_4(x) = \left(\frac{48}{x^3} - \frac{8}{x}\right)J_1(x) + \left(1 - \frac{24}{x^2}\right)J_0(x)$. CO4 7 Marks

b) Prove that $4J_n''(x) = J_{n-2}(x) - 2J_n(x) + J_{n+2}(x)$. CO4 7 Marks

UNIT-II

3 a) If w=$\phi + i\psi$ represents the complex potential for an electric field and $\psi = x^2 - y^2 + \frac{x}{x^2 + y^2}$, determine the function ϕ. CO4 7 Marks

b) Show that $f(z) = \begin{cases} \frac{xy^2(x - iy)}{x^2 - y^4} & z \neq 0 \\ 0 & z = 0 \end{cases}$ is not analytic at z = 0 although C-R equations satisfied at the origin. CO1 CO4 7 Marks

(OR)

4 a) An electric field in the xy-plane is given by the potential function $\varphi = 3x^2y - y^2$, find the stream function. CO4 7 Marks

b) Show that $f(z) = e^{-x}(x\sin y - y\cos y)$ is harmonic. CO4 7 Marks

UNIT-III

5 a) *Evaluate* $\oint_C \frac{\log z}{(z-1)^3} dz$ Where C is a circle |z-1|=1/2. CO4 7 Marks

b) Apply Cauchy's integral formula, evaluate $\int_C \frac{e^{2z}}{(z-1)(z-5)} dz$ where C is the circle |z| = 5. CO4 7 Marks

(OR)

6 Represent the function f(z)= $\frac{4z + 3}{z(z-3)(z-2)}$ as Laurent series CO2 CO3 14 Marks

i) with in |z|=1.
ii) in the annulus region |z|=2 and |z|=3.
iii) exterior to |z|=3.

UNIT-IV

7 Evaluate $\int_{-\infty}^{\infty} \frac{x^2 dx}{(x^2 + 1)(x^2 + 4)}$. CO4 14 Marks

(OR)

8 a) Find the residue of $\frac{z^2}{(z+2)z(z-1)^2}$ at the each pole. CO4 7 Marks

b) Apply the calculus of residues. evaluate $\int_0^{2\pi} \frac{d\theta}{(a+b\cos\theta)}.(a>b>0)$. CO4 7 Marks

UNIT-V

9 a) Determine the region of the w-plane into which the following regions are mapped by the transformation $w=z^2$: (i) the circle $|z-1|=2$ (ii) the region bounded by $1\le x\le 2$ *and* $1\le y\le 2$. CO4 7 Marks

b) Obtain the bilinear transformation which maps the points z=0, 1, ∞ into the points w = -3, -1, 1 respectively. Find also the fixed points of the transformation. CO4 7 Marks

(OR)

10 a) Find the invariant points of the transformation $w=(z-1)/(z+1)$. Is it parabolic. CO4 7 Marks

b) Show that under the transformation $w=(z-i)/(z+i)$, real axis in the z-plane is mapped into the circle $|w|=1$. Which portion of the z-plane corresponds to the interior of the circle? CO4 7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular/Supplementary Examinations November - 2018

ENVIRONMENTAL STUDIES

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is deforestation? Explain the causes and effects.	CO1	7 Marks
	b)	With the help of a case study, explain the adverse effects of mining.	CO2	7 Marks
		(OR)		
2	a)	Differentiate renewable from non-renewable energy sources.	CO1	7 Marks
	b)	What are the responsibilities of an individual in conserving the natural resources to have the sustainability?	CO1	7 Marks

UNIT-II

3	a)	Write a detailed note on ecological pyramids.	CO2	7 Marks
	b)	Explain the structure of a desert ecosystem.	CO2	7 Marks
		(OR)		
4	a)	Write a detailed note on endangered and endemic species.	CO2	7 Marks
	b)	Why India is called a Mega Diversity Nation.	CO2	7 Marks

UNIT-III

5	a)	Write the adverse effects of air pollution. Suggest a few control measures.	CO3	7 Marks
	b)	Give some sources of noise pollution. What is the level of noise pollution in India?	CO3	7 Marks
		(OR)		
6	a)	Write a detailed note on disaster management.	CO4	7 Marks
	b)	Explain the terms compost, refuse and municipal solid waste.	CO4	7 Marks

UNIT-IV

7	a)	What is climate change? Explain the causes and effects of Global Warming.	CO6	7 Marks
	b)	Write about the nuclear accident with the help of a case study.	CO6	7 Marks
		(OR)		
8	a)	What was the beginning of Environmental Legislation in India? What are the powers does Environmental Protection act give to the central government?	CO8	7 Marks
	b)	How are the Environmental Laws being enforced? What is National Green Tribunal?	CO8	7 Marks

UNIT-V

9	a)	Write a short note on Human Rights and Population explosion.	CO7	7 Marks
	b)	Explain the role of Information Technology in Environment and Human health.	CO5	7 Marks
		(OR)		
10	a)	What are the steps that you suggest to be taken for the women and children's welfare?	CO7	7 Marks
	b)	What is Environmental Impact statement? What does it contain?	CO8	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular/Supplementary Examinations November - 2018

MANAGERIAL ECONOMICS AND PRINCIPLES OF ACCOUNTANCY

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	Define Managerial Economics. Briefly explain the importance, nature and scope of Managerial Economics.	CO1	14 Marks
	(OR)		
2	What is elasticity of demand? Explain the different types of price elasticity of demand.	CO1	14 Marks

UNIT-II

3	What is production function? Distinguish between fixed inputs and variable inputs. Is the distinction between the two relevant in the long run?	CO2	14 Marks
	(OR)		
4	Differentiate between: i) Historical Cost *Vs*. Sunk Cost. ii) Accounting Cost *Vs*. Economic Cost. iii) Fixed Cost *Vs*. Variable Cost.	CO1	14 Marks

UNIT-III

5	What is Monopoly? Explain the conditions necessary for the existence of Monopoly.	CO2	14 Marks
	(OR)		
6	What is Market? Explain Price determination in Perfect competition.	CO2	14 Marks

UNIT-IV

7	What is meant by Double Entry Book-Keeping? Explain the objectives, advantages and limitations of Double Entry Book-Keeping.	CO1	14 Marks
	(OR)		
8	Write journal Entries for the following transactions in the books of Mr. Santhosh Kumar. 2016 June 2 Started business with Rs. 40,000 in cash June 4 Bought goods from Prakash Rs.32,710 June 7 Sold goods to Surya Rs.12,930 June 10 Cash sales Rs.3,720 June 14 Sold goods to Babu Rao Rs.6,310 June 17 Paid Prasad on account Rs.15,000 June 21 Paid Salary to manager Rs.5,000 June 30 Office rent paid to Land Lord Rajesh Rs.4,000	CO3	14 Marks

UNIT-V

9	What is a Balance Sheet? Explain the distinction between Trading and Profit & Loss Account and Balance Sheet.	CO1	14 Marks
	(OR)		

10 From the following Trail Balance of Gopi prepare Trading and Profit & Loss Account for the year ended 31st December, 2016 and Balance Sheet as on that date. CO4 14 Marks

Particulars	**Debit Balances**	**Credit Balances**
Capital		47,000
Drawings	4,260	
Furniture	5,700	
Stock	8,760	
Purchases and Sales	62,172	71,436
Returns	1,260	1,746
Salaries	2,640	
Rent	720	
Rates and Taxes	41,500	
Apprentice Premium		750
Bank overdraft		21,560
Bad debts	1,032	
Sundry Debtors	19,200	
Cash in hand	288	
Sundry Creditors		6,000
Provision for bad debts		600
Bills receivables	1,440	
Discount		1,080
Suspense Account	1,200	
TOTAL	**1,50,172**	**1,50,172**

Additional information:

i) Stock on December31, 2016 was Rs 20,000.

ii) Provision for doubtful debts at 5% on Sundry debtors.

iii) Rent due was Rs.200.

iv) Depreciation on furniture at 10%.

CODE No.:16BT30101 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular/Supplementary Examinations November - 2018

CONSTRUCTION PLANNING AND PROJECT MANAGEMENT

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is planning and why planning is very important in construction management?	CO1	7 Marks
	b)	What are the stages and types of planning in construction management?	CO1	7 Marks
		(OR)		
2	a)	Discuss the importance of Contract Labour Act (Regulation and Abolition) with reference to the construction industry and bring out the salient features of this Act.	CO8	7 Marks
	b)	What are the advantages and disadvantages of planning?	CO1	7 Marks

UNIT-II

3	a)	What do you mean by resource smoothing? What are the steps involved in resource smoothing for doing the resource smoothing?	CO9	7 Marks
	b)	What are the steps involved in resource leveling? Illustrate with an example.	CO9	7 Marks
		(OR)		
4	a)	Compare the characteristics and applications of different types of earth excavating equipment.	CO5	7 Marks
	b)	Discuss the different types of layout for stores management.	CO9	7 Marks

UNIT-III

5	a)	List out the classification of scheduling.	CO1	7 Marks
	b)	In a building project the following activities are to be carried out before starting the construction the construction.	CO4	7 Marks

Activity	Type of work	Completion time (in weeks)
A	Site selection and survey	5
B	Design	7
C	Preparation of drawings	3
D	Preparing specifications and tender notifications	2
E	Tendering	5
F	Selection of contractor	1
G	Award of contract	1

Prepare a bar chart and find the completion time for awarding the contract.

(OR)

6		What is a milestone chart? How does it differ from a bar chart? How milestone chart can be developed into a network?	CO5	14 Marks

UNIT-IV

7 a) What is a network? What are the different types of network scheduling? Give examples. CO1 7 Marks

b) In a small construction project, there are 6 activities identified from G to L. The following are the relationships between the different activities: CO3 7 Marks

i) G is the first activity to be performed
ii) H and I can be done concurrently and must follow G
iii) H must precede J
iv) K must succeed I, but, it cannot start until H is completed
v) The last operation L is dependent upon the completion of both J and K.
Draw and number the network.

(OR)

8 a) What is a dummy? How and where should a dummy be used? CO3 7 Marks

b) Draw a network for a simple project of erection of steel works for a shed. The various elements of the project are as follows: CO3 7 Marks

Activity	Description	Pre-requisites
A	Erection of site workshop	-
B	Fence site	-
C	Bend Reinforcement	A
D	Dig foundation	B
E	Fabricate steel works	A, C
F	Install concrete plant	B
G	Place reinforcement	C. D
H	Concrete foundation	G, F
I	Paint steel work	E
J	Erect steel work	H, I
K	Giving finishing touch	J

UNIT-V

9 a) What is a critical path? How is it identified? CO1 7 Marks

b) A project has the following characteristics: CO2 7 Marks

Activity	Preceding Activity	Expected completion time (days)
A	None	5
B	A	2
C	A	6
D	B	12
E	D	10
F	D	9
G	D	5
H	B	9
I	C, E	1
J	G	2
K	F, I, J	3
L	K	9
M	H, G	7
N	M	8

i) Draw a PERT network for the project.
ii) Find various paths and critical path as well as project duration.

(OR)

10. a) Discuss in brief the resources allocation problem. What are the methods of solving the problem? CO9 8 Marks

b) What do you understand by 'cost slope'? How do you determine it? CO1 6 Marks

CODE No.:16BT30102 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular/Supplementary Examinations November - 2018

FLUID MECHANICS AND HYDRAULIC MACHINERY

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Can you distinguish between Newtonian and non-Newtonian fluids? Suppose that the fluid being sheared in SAE 30 oil (viscosity = 0.29kg/(ms)) at 20°C. Compute the shear stress in the oil if velocity is 3m/s and h = 2 cm.	CO1	7 Marks
	b)	Explain centre of Buoyancy? Lake has a maximum depth of 60m and the mean atmospheric pressure is 91kpa. Determine the absolute and gauge pressure in kpa at this maximum depth.	CO2	7 Marks

(OR)

2	a)	A plate having size 100 mm x 100mm is pulled with velocity of 0.05m/s over a fixed plate at distance of 0.25mm. Find (i) force and (ii) power to maintain velocity if fluid has μ = 1 poise.	CO2	7 Marks
	b)	A plate of size 25cm x 25 cm and weight 1000N slides down on inclined surface inclining 30^0 to the horizontal which has certain thickness of lubrication with μ = 0.1 poise. This attains velocity of 0.5m/s over the lubricated surface. Find the thickness of lubrication.	CO2	7 Marks

UNIT-II

3	a)	Distinguish between stream lines, streak lines and path lines? For a flow in the xy plane, the 'y' component of velocity is given by $v = y^2 - 2x - 2y$. Determine a possible 'x' component for a steady, incompressible flow, how many possible 'x' components are there?	CO2	7 Marks
	b)	In a two-dimensional incompressible flow over a solid plate, the velocity component perpendicular to the plate is $v = 2x^2y^2 + 3y^3x$, where x is the coordinate along the plate. Hence find out (i) The velocity component along the plate (ii) An expression for stream function and then verify whether the flow is irrotational or not.	CO2	7 Marks

(OR)

4	a)	State and derive continuity equation for two dimensional incompressible fluid and also compressible fluid.	CO2	7 Marks
	b)	The water is flowing through a tapering pipe having diameters 300mm and 150mm at sections 1 and 2 respectively. The discharge through the pipe is 40 litters/sec. The section 1 is 10m above datum and section 2 is 6m above datum. Find the intensity of pressure at section 2 if that at section 1 is 400kN/m^2.	CO2	7 Marks

UNIT-III

5	a)	Derive an expression for the head loss due to sudden contraction in pipe flow. A pipe line 2000m long is used for power transmission. 110KW is to be transmitted through the pipe in which water having a pressure of 5000 KN/m^2 at inlet is flowing. If the pressure drop over the length of the pipe is 1000 KN/m^2 and co-efficient of friction is 0.0065, estimate: (i) the diameter of the pipe. (ii) efficiency of the transmission.	CO3	7 Marks

	b)	Explain briefly the following: i) Hydraulic Gradient Line (HGL). ii) Energy Gradient Line (EGL). A compound piping system consists of 1800m of 0.50m, 1200m of 0.40m and 600m of 0.30m new cast iron pipes connected in series. Convert the system to: i) an equivalent length of 0.40m pipe. ii) equivalent size pipe 3600m long.	CO3	7 Marks
		(OR)		
6	a)	What are the methods of dimensional analysis? Describe the Rayleigh's method for dimensional analysis.	CO4	7 Marks
	b)	Using the Buckingham's π theorem, show that the velocity U through a circular orifice is given by $\mathbf{U = (2gH)^{0.5}\ \phi\ (D/H,\ \rho UH/\mu)}$. Where H is the head causing flow, **D** is the diameter of the orifice, μ is the coefficient of dynamic viscosity, ρ is the density of fluid flowing through the orifice and **g** is the acceleration due to gravity.	CO4	7 Marks
		UNIT-IV		
7	a)	In what ways is the open channel flow different from the flow in closed conduits? Obtain the relation between Manning's constant and Chezy's constant	CO5	7 Marks
	b)	The normal depth of flow of water in a rectangular channel 1.5m wide is one meter. The bed slope of the channel is 0.0006 and Manning's roughness co-efficient is 0.012. Find the critical depth. At a certain section of the same channel the depth is 0.92 while at a second section the depth is 0.86m. Find the distance between the two sections.	CO5	7 Marks
		(OR)		
8	a)	Discuss briefly the types of Hydraulic jump and its applications.	CO5	7 Marks
	b)	A river whose section may be assumed to be rectangular is 40m wide. At a bridge the flow width is restricted to 35m due to bridge piers. The maximum flood discharge is $600m^3/s$ corresponding to the condition the depth u/s should be minimum for the above discharge what type of flow will prevail under the bridge. Find also upstream depth. Ignore energy loss.	CO5	7 Marks
		UNIT-V		
9	a)	A jet strikes tangentially a smooth curved vane moving in the same direction as the jet and the jet gets reversed in the direction. Show that the maximum efficiency is slightly less than 60 %.	CO3	7 Marks
	b)	A jet of water 50mm in diameter having a velocity of 20m/s, strikes normally a flat smooth plate. Determine the thrust on the plate (i) if the plate is at rest; (ii) if the plate is moving in the same direction as the jet with a velocity of 8m/s. Also find the work done per second on the plate and the efficiency of the jet when the plate is moving.	CO3	7 Marks
		(OR)		
10	a)	Estimate the main component parts of a centrifugal pump and explain them briefly. Explain the working principle of a single stage centrifugal pump with a neat sketch.	CO1	7 Marks
	b)	Write the performance characteristics of different turbines. Show that when runner blade angle at inlet of a Francis turbine is 90^0 and the velocity of flow is constant, the hydraulic efficiency is given by $\mathbf{2/(2+\tan^2 \alpha)}$, Where α is the vane angle.	CO2	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular/Supplementary Examinations November - 2018

MECHANICS OF SOLIDS

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) A steel wire 2m long and 3mm in diameter is extended by 0.75mm when a weight 'W' is suspended from the wire. If the same weight is suspended from a brass wire, 2.5m long and 2mm in diameter, it is elongated by 4.64mm. Determine the modulus of elasticity of brass if that of steel be 2.0×10^5 N/mm^2. CO1 7 Marks

b) A steel rod having 25mm^2 in cross sectional area and is loaded at four points K, L, M and N is as shown in Fig 1 below. Assume Young's Modulus of steel is 200 GPa. CO2 7 Marks

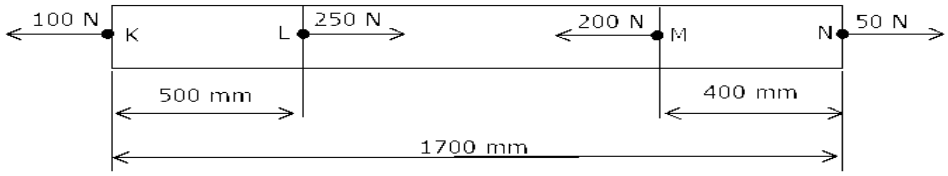

Fig 1

Determine the:

i) total change in length of the rod due to loading.
ii) stress in each portion of the rod.

(OR)

2 a) A steel tube of 35mm outer diameter and 30mm inner diameter encloses a gunmetal rod of 25mm diameter and is rigidly joined at each end. If at a temperature of 40^0/c there is no longitudinal stress. Determine the stresses developed in the rod and the tube when the temperature of the assembly is raised to 240^0c. CO2 10 Marks

Coefficient of thermal expansion of steel = $11 \times 10^{-6}/^0$c
Coefficient of thermal expansion of gun metal = $18 \times 10^{-6}/^0$c
Young's modulus for steel = 205 GPa
Young's modulus for gun metal = 91.5 GPa

Also find the increase in length if the original length of the assembly is 1m.

b) i) What is the ratio of Young's modulus to bulk modulus value if the Poisson's ratio of material is 0.3? CO1 4 Marks

ii) What is the relationship between the Young's modulus (E), shear modulus (G) and Poisson's ratio (μ) for an isotropic material?

UNIT-II

3 A beam ABC is supported at A and B. It is loaded with a u.d.l of 20kN/m on entire beam and a point load of 10KN at C. Span AB is 5m and overhang BC is 1m. Draw shear force and bending moment diagram. CO2 14 Marks

(OR)

4 Determine the maximum shear force and bending moment of a simply supported beam carrying a uniformly distributed load of 'w' Per unit run over the whole span. Also Draw the SFD and BMD. CO2 14 Marks

UNIT-III

5		A timber beam 150mm wide and 200mm deep carries a uniformly distributed load over a span of 4 m and is simply supported. If the permissible bending stresses are 30N/mm^2 longitudinally and 3N/mm^2 transverse shear. Determine the maximum load which can be carried by the timber beam.	CO1	14 Marks

(OR)

6		A hollow rectangular masonry pier is 1.2m x 0.8m, overall, the wall thickness being 0.15m.A vertical load of 100 KN is transmitted in the vertical plane bisecting 1.2m side at an eccentricity of 0.1m from the geometric axis of the section. Calculate the maximum and minimum stress intensities in the section.	CO5	14 Marks

UNIT-IV

7		A hollow shaft and a solid shaft construction of the same material have the same length and the same outside radius. The inside radius of the hollow shaft is 0.6 times of the outside radius. Both the shafts are subjected to the same torque. (i) What is the ratio of maximum shear stress in the hollow shaft to that of solid shaft? (ii) What is the ratio of angle of twist in the hollow shaft to that of solid shaft?	CO1	14 Marks

(OR)

8	a)	A closed coiled helical spring of round steel wire 10mm in diameter having 10 complete turns with a mean diameter of 120mm is subjected to an axial load of 200N. Determine the i) Deflection of the spring. ii) Maximum shear stress in the wire. iii) Stiffness of the spring.	CO4	10 Marks
	b)	A helical spring has 'N' turns of coil diameter D and a second spring, made of same wire diameter and of same material has 'N/2' turns of coil diameter 2D.What will be the stiffness of the second spring if the stiffness of the first spring is 'K'.	CO3	4 Marks

UNIT-V

9	a)	A thin cylinder of internal diameter 1.25m contains a fluid at an internal pressure of 2N/mm^2. Determine the maximum thickness of the cylinder if; i) The longitudinal stress is not to exceed 30 N/mm^2. ii) The circumferential stress is not to exceed 45 N/mm^2.	CO3	10 Marks
	b)	What is the maximum shear stress is induced in a thin-walled cylindrical shell having an internal diameter 'D' and thickness "t'' when subject to an internal pressure 'p'?	CO1	4 Marks

(OR)

10	a)	State the assumptions involved in the analysis of thick cylinders.	CO1	4 Marks
	b)	A Compound cylinder is made by a jacket on to a cylinder. The internal diameter is 110mm, the outside diameter 230mm and the diameter at the junction is 90mm.The cylinder is subjected to an internal pressure of 45 Mpa. If the pressure at the common junction is 16 MPa before the fluid pressure is applied, find the final stresses at different sections.	CO6	10 Marks

CODE No.:16BT30104 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular/Supplementary Examinations November - 2018

SURVEYING

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) What are offsets? What are the types of offsets and methods of taking offsets? CO1 7 Marks

b) Perpendicular offsets are observed using chain and type for compound wall from the existing road. CO2 7 Marks

Chainage,m	0	15	30	45	60	75	90	105	120
Offsets, m	4.5	6.5	8.7	12.0	10.6	6.5	4.5	4.0	6.5

Calculate the area between the survey line, compound wall and the end offsets using Trapezoidal rule and Simpsons rule.

(OR)

2 a) What the sources of errors in chaining? What are the precautions to be taken to avoid those errors? CO6 7 Marks

b) A 30m chain was tested before the commencement of days work and found 5cms too long. After chaining a distance of 1600m, it was checked again and found to be 10cm too long. At the end of days work after chaining 3000m the chain was found to be 18cm too long. Determine the true distance measured. CO2 7 Marks

UNIT-II

3 Enlist and mention the function of each of the instrument required for plane table surveying also explain advantages and disadvantages of plane table surveying. CO3 14 Marks

(OR)

4 a) List out the advantages and disadvantages of contour maps. CO1 7 Marks

b) A road has been surveyed using leveling instrument and following are the staff readings made 0.675, 1.230, 0.750, 2.565, 2.225, 1.935, 1.835, 3.220, 3.115 and 2.875. The instrument has been shifted after second, fifth and eighth readings. The first staff reading was taken with a staff held on BM of reduced level +100.00. Collect and enter the readings in the level book and determine the reduced levels of all the points. CO4 7 Marks

UNIT-III

5 A tacheometer was setup at station C and the following observations are made on a staff held vertical. K = 100 and C=0.15 CO4 14 Marks

Instrument station	Staff station	Vertical angle	Staff Reading
C	BM	$-5^0 20'$	1.150, 1.800, 2.450
C	D	$+8^0 12'$	0.750, 1.500, 2.250

RL of bench mark is 750.500. Calculate horizontal distance CD and RL of D.

(OR)

6 A closed traverse ABCDEA was run in the counter clockwise direction and the following observations are obtained. CO3 14 Marks

Line	Length, m	Included angle
AB	186	Angle A = $118^0$20’
BC	164	Angle B = $82^0$10’
CD	303	Angle C = $130^0$00’
DE	162	Angle D = $73^0$44’
EA	240	Angle E = $128^0$36’

The bearing of AB was $24^0$30’. Determine the closing error, adjust it and give the corrected consecutive coordinates.

UNIT-IV

7 a) Two straights of a road intersect at a chainage of 2550.5m having an angle of intersection at 110^0. Find the various elements of a simple circular curve of 4^0 to be introduced between the straights. CO3 7 Marks

b) What are different types of curves? Explain their characteristics briefly. CO1 7 Marks

(OR)

8 Explain the procedure to set out simple circular curve by Rankines method. CO1 14 Marks

UNIT-V

9 a) Explain various applications of total station. CO5 7 Marks

b) Explain the following: CO5 7 Marks

i) Digital theodolite.

ii) Digital Level.

(OR)

10 a) Explain working principles of EDM by phase difference method. CO1 7 Marks

b) What are various advantages and disadvantages of total station? Explain briefly. CO1 7 Marks

CODE No.:16BT30201 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular/Supplementary Examinations November - 2018

DC MACHINES

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Derive an expression for the e.m.f generated in a d.c machine.	CO2	7 Marks
	b)	A 10kW, 250V, 8-pole, 600 r.p.m lap-connected d.c generator has 400 armature conductors. At rated voltage and current, armature ohmic losses are 150 watts. Compute the useful flux per pole.	CO4	7 Marks
		(OR)		
2	a)	Make use of slip rings and split rings explain the principle of operation of a d.c generator.	CO1	7 Marks
	b)	An 8-pole, 25kW and 120V d.c generator has a duplex lap-wound armature which has 64 coils with 16 turns per coil. Its rated speed is 2400 r.p.m. How much flux per pole is required to produce the rated voltage in this generator at no load conditions?	CO3	7 Marks

UNIT-II

3	a)	Explain about demagnetizing ampere turn per pole and cross magnetizing ampere turn per pole.	CO1	6 Marks
	b)	A 4-pole generator has wave wound armature with 722 conductors and it delivers 100A on full load. If the brush lead is 8 degrees, calculate the armature demagnetizing and cross-magnetizing ampere turns per pole.	CO4	8 Marks
		(OR)		
4	a)	With a neat diagram, explain the phenomenon of armature reaction in a d.c machine. Discuss its effects and mention the methods to reduce the effect of armature reaction.	CO1	7 Marks
	b)	Explain about compensating windings and inter poles.	CO1	7 Marks

UNIT-III

5	a)	Explain experimental determination of critical field resistance for a self excited generator.	CO2	7 Marks
	b)	A d.c. shunt generator is supplying load connected to a bus - bar voltage of 220V. It has an armature resistance of 0.025Ω and field resistance of 110Ω. Calculate the value of load current and load power when it generates an e.m.f of 230V. Neglect the effect of armature reaction. Draw circuit diagram.	CO4	7 Marks
		(OR)		
6	a)	Which generator is suitable to maintain constant d.c voltage at the consumer's terminals and justify your answer?	CO5	4 Marks
	b)	Two 220V, d.c generators each having linear external characteristics operate in parallel. One machine has a terminal voltage of 270V on no-load and 220V at a load current of 35A, While the other has a voltage of 280V at no-load and 220V at 50A. Calculate the output current of each machine and the bus-bar voltage when the total load is 60A.	CO2	10 Marks

UNIT-IV

7	a)	Explain the construction and operation of 4-point starter used for starting of d.c motor.	CO1	7 Marks
	b)	A 4 pole d.c series motor has wave connected winding with 600 conductors. Total resistance of the motor is 0.8Ω. When fed from 250V source, d.c motor supplies a load of 10kW and takes 50A with a flux per pole of 3mWb. For these operating conditions, calculate the developed torque and the shaft torque.	CO2	7 Marks

(OR)

8	a)	Select and describe the suitable speed control method for d.c shunt motor which is used to control the speed in both the directions smoothly.	CO5	7 Marks
	b)	A 2 pole lap wound d.c shunt motor with 360 conductors operates at a constant flux level of 50mWb. The motor armature has a resistance of 0.12 Ω and is designed to operate at 240V, taking a current of 60A at full load. i) Determine the value of external resistance to be inserted in the armature circuit so that armature current does not exceed twice its full load value at starting. ii) The external resistance is completely cut out when the motor reaches its final speed with the armature current at the full load value. Calculate the motor speed under these conditions.	CO3	7 Marks

UNIT-V

9		The Hopkinson test on two similar dc shunt machines gave the following results: Line voltage: 220V; Line current excluding filed current: 40A; Armature current of motoring machine: 200A; field currents are 6A and 7A. Calculate the efficiency of each of the machine at the given load conduction. The armature resistance of each machine is 0.05Ω.	CO4	14 Marks

(OR)

10	a)	A 440V d.c shunt motor takes a current of 3A at no-load. The armature resistance including brushes is 0.3Ω and the field current is 1A. Compute the output and efficiency when the input current is 20A.	CO2	7 Marks
	b)	Weight on the brake drum = 4.5kg and 0.5kg, Radius of the pulley = 12cm, Speed of the motor = 1200 r.p.m. Line current = 3.7A, Supply voltage = 200V. Compute the output torque and efficiency of the motor.	CO4	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-16) Regular/Supplementary Examinations November - 2018

ELECTROMAGNETIC FIELDS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	State and explain Coulomb's law. Obtain an expression in vector form.	CO1	7 Marks
	b)	Point charges of 50nC each are located at A(1, 0, 0), B(−1, 0, 0), C(0,1,0) and D(0,−1, 0) in free space. Find the total force on the charge at A.	CO4	7 Marks
		(OR)		
2	a)	Calculate the potential at a point (0, 0, h) due to a circular disc of radius 'a' having a surface charge density of ρ_s C/m^2 with its centre at the origin. Calculate the field at point P (0, 0, z).	CO4	7 Marks
	b)	A 2 μC point charge is located at *A(4, 3, 5)* in free space. Find E_ρ, E_φ and E_z at *P(8, 12, 2)*.	CO4	7 Marks

UNIT-II

3	a)	What are electric boundary conditions? Derive them for the case dielectric–dielectric boundary with neat sketch.	CO3	8 Marks
	b)	Derive the Ohm's law in point form from fundamentals.	CO3	6 Marks
		(OR)		
4	a)	Derive current continuity equation.	CO1	7 Marks
	b)	For the current density $\mathbf{J}=10z\sin^2\phi\mathbf{a}_\rho$A/m^2, find the current through the cylindrical surface $\rho = 2$, $1 \le z \le 5$m.	CO3	7 Marks

UNIT-III

5	a)	Derive an expression for magnetic field strength **H** due to a finite filamentary conductor carrying a current I and placed along z-axis at a point P on y-axis. Hence deduce the magnetic field strength for the length of a conductor extending from -infinite to +infinite.	CO4	7 Marks
	b)	Give Maxwell's equation for static magnetic fields in integral and differential form and explain.	CO2	7 Marks
		(OR)		
6	a)	Derive an expression for magnetic field strength **H** due to infinitely long coaxial transmission line. Find **H** everywhere.	CO4	8 Marks
	b)	Short notes on scalar and vector magnetic potential.	CO1	6 Marks

UNIT-IV

7	a)	Derive the expression for energy stored in static magnetic field.	CO1	7 Marks
	b)	A point charge of 10C moves with a uniform velocity of $2\mathbf{a}_x-4\mathbf{a}_z$m/s in an EM field having $E = \mathbf{a}_x-3\mathbf{a}_y+8\mathbf{a}_z$V/m and $B=0.3\mathbf{a}_x+0.1\mathbf{a}_y$ Wb/m^2. Find the total force on the charge.	CO3	7 Marks
		(OR)		
8	a)	Derive an expression of force between two straight long and parallel current carrying conductors.	CO3	8 Marks
	b)	Give and explain Lorenz force equation.	CO2	6 Marks

UNIT-V

9	a)	A parallel-plate capacitor with plate area of $5cm^2$ and plate separation of 3mm has a voltage $50\sin 10^3 t$ V to its plates. Calculate the displacement current assuming $\varepsilon = 2\varepsilon_0$.	CO3	6 Marks
	b)	Give Maxwell's equations for time varying fields in both differential and integral form. Explain each.	CO2	8 Marks
		(OR)		
10	a)	Derive Poynting theorem and Poynting vector.	CO5	8 Marks
	b)	In free space $\mathbf{E(z, t) = 1.0\sin(\omega t - \beta z)\, a_x V/m}$. show that the average power crossing a circular disc of radius 15.5m in a z = constant plane is 1W.	CO2	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-16) Regular/Supplementary Examinations November - 2018

SIGNALS, SYSTEMS AND NETWORKS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit

All questions carry equal marks

UNIT-I

1 a) Define stability of the system and also test the stability of the system given by $y(t) = a^2x(3t) + x(t^2)$. CO2 7 Marks

b) Discriminate periodic and non-periodic signal and check the signal given is periodic or not $y(t) = 5\sin(15\pi t + \pi/3) + 7\cos(19\pi t - \pi/3)$. CO2 7 Marks

(OR)

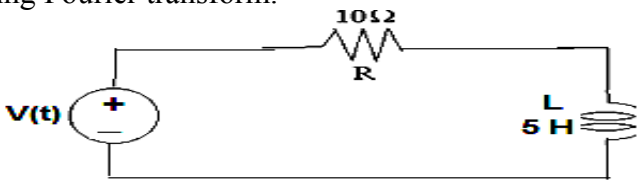
2 a) State and explain the use of convolution of LTI system. CO2 6 Marks

b) Determine the complete response of the system defined by the differential equation $\frac{d^2x(t)}{dt} + 6\frac{dx(t)}{dt} + 5x(t) = \frac{du(t)}{dt}$ with $x(0) = 2$ and $\frac{dx(0)}{dt} = 1.5$ for the input $\mathbf{u(t)=e^{-3t}}$. CO2 8 Marks

UNIT-II

3 a) State the properties of Fourier series and Fourier transform. CO1 6 Marks

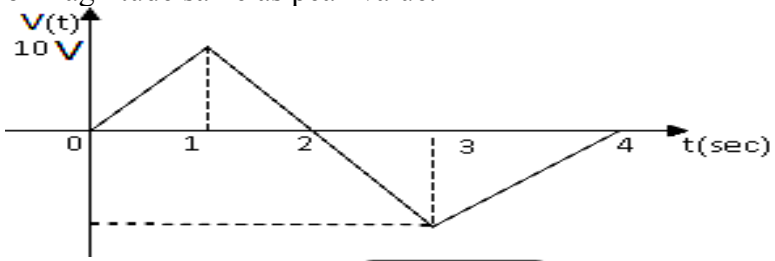
b) Determine the current passing through inductor i(t), if the source of voltage applied to circuit is $v(t) = 5 + 8(\sin t + \sin 3t + \sin 5t)$ as shown in figure using Fourier transform. CO2 8 Marks



(OR)

4 a) Compare Fourier and Laplace transforms in solving the network problems. CO1 5 Marks

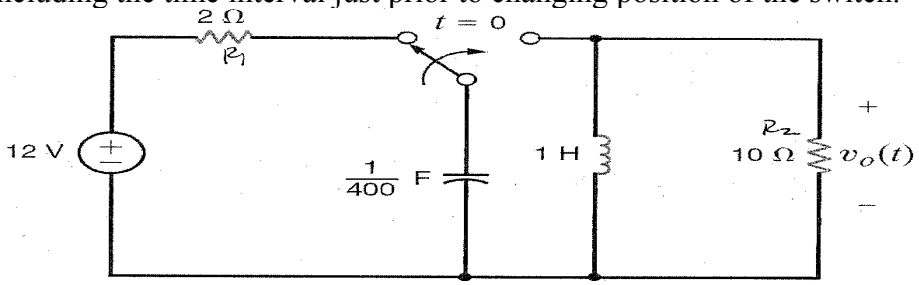
b) The periodic voltage waveform shown in figure is applied across a 5kΩ resistor. Find the average power dissipated and also compare with DC power of magnitude same as peak value. CO2 9 Marks



UNIT-III

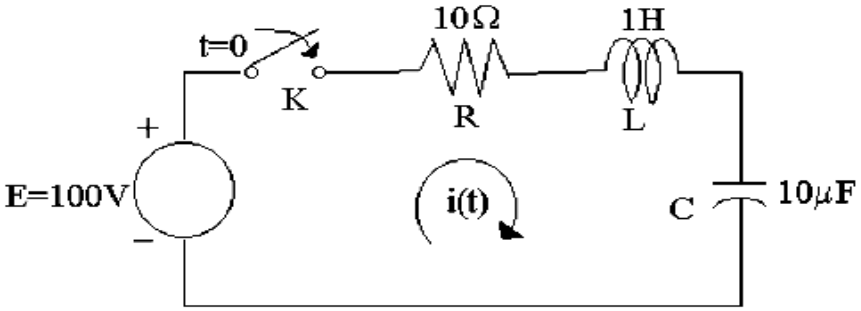
5 a) State the significance of initial and final values of transient circuit. CO2 5 Marks

b) Find $V_0(t)$ for $t > 0$ in the circuit shown below and plot the response including the time interval just prior to changing position of the switch. CO2 9 Marks



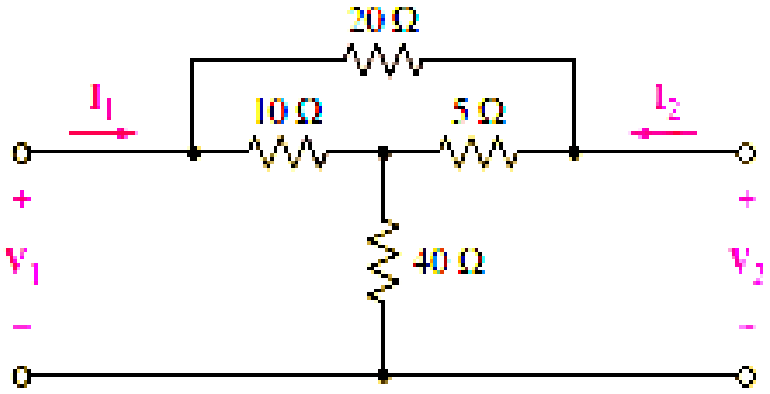
(OR)

6	a)	State the significance of transient analysis and also state and explain the necessity of transient studies.	CO2	6 Marks
	b)	For the network shown, the switch is closed at t=0. If the current in L and voltage across C are 0 for $t < 0$, find $i(0^+)$, $\left.\frac{di(t)}{dt}\right\|_{t=0+}$, $\left.\frac{d^2i(t)}{dt^2}\right\|_{t=0+}$ and also compute the $i(t)$ at $t > 0$.	CO4	8 Marks

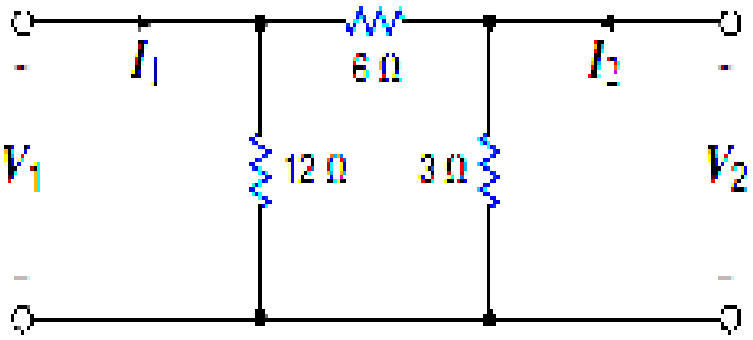


UNIT-IV

7	a)	Compute the Y parameters for the following circuit.	CO3	7 Marks

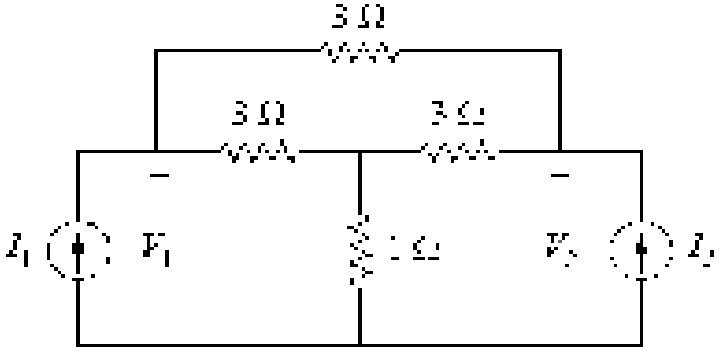


	b)	Compute the Z parameters and T parameters of the two port network shown in figure.	CO3	7 Marks

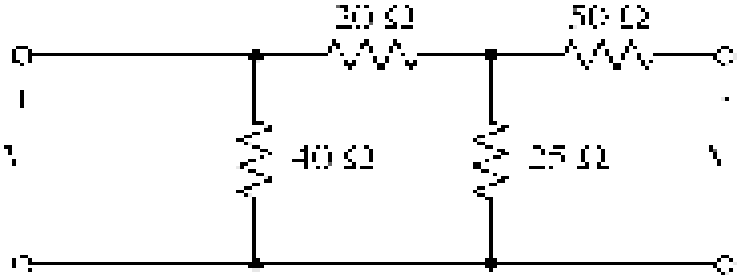


(OR)

8	a)	In the bridge circuit of figure, I_1 = 10 A and I_2 = -4 A. i) Find V_1 and V_2 using Y parameters. ii) Confirm the results of part (a) by direct current analysis.	CO3	7 Marks



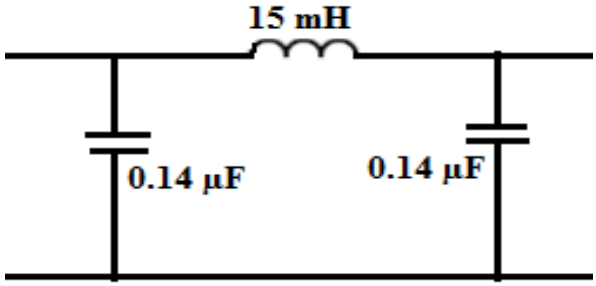
b) Compute the Z parameters for the circuit shown below. CO3 7 Marks



UNIT-V

9 a) State the significance of constant-k filter, and also derive expression for design of impedance of a constant k filter. CO2 6 Marks

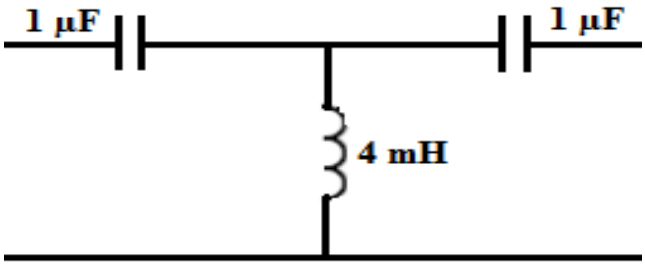
b) For a π section filter network shown in Fig., calculate the cut-off frequency and the value of nominal impedance in the pass band. CO4 8 Marks



(OR)

10 a) State the significance of propagation constant in filter design and explain the design procedure for low pass T-section filter. CO2 6 Marks

b) Determine the cut-off frequency and design impedance for the T-section shown in Fig. CO6 8 Marks



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CODE No.:16BT30241 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular/Supplementary Examinations November - 2018

ELECTRICAL TECHNOLOGY

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Why brushes and commutator are necessary for operation of DC machine.	CO2	4 Marks
	b)	The armature of 6 pole DC generator has a wave winding containing 664 conductors. Compute the generator emf when flux per pole is 0.06 Weber and the speed is 250 r.p.m. At what speed must be the armature an emf of 250V if the flux per pole is reduced to 0.058 Weber.	CO4	10 Marks
		(OR)		
2	a)	Explain the working of a 3-point starter for a DC machine.	CO1	7 Marks
	b)	Explain the process to predetermine the efficiency of DC motor by using Swinburne's test.	CO2	7 Marks

UNIT-II

3		A 7kVA 200/1000V, 50Hz, single-phase transformer gave the following test results: O.C Test (L.V. Side): 2000V, 1.2A, 90W S.C Test (H.V. Side): 50V, 5A, 110W i) Calculate the parameters of the equivalent circuit referred to the L.V side. ii) Calculate the output secondary voltage when delivering 3kW at 0.8p.f. lagging, the input primary voltage being 200V and also find the percentage regulation.	CO4	14 Marks
		(OR)		
4	a)	Describe the tests to be performed on a single phase transformer to determine the equivalent circuit parameters.	CO2	7 Marks
	b)	The following results were obtained from tests on 30KVA, 3000/110V, and transformer. O.C. test: 3000V, 0.5A, 350W S.C. test: 150V, 10A, 500W Estimate the efficiency of the transformer at full load with 0.8 lagging power factor.	CO4	7 Marks

UNIT-III

5	a)	Derive the expressions of phase and line quantities in star connected network.	CO2	7 Marks
	b)	A balanced delta connected load of $(2+j3)\Omega$ per phase is connected to a balance 3-phase 440V supply. The phase current is 10A. Find the; i) total active power. ii) reactive power. iii) apparent power in the circuit.	CO4	7 Marks
		(OR)		

6	a)	A 3-phase, balanced delta connected load of (4+j8)Ω is connected across a 400V 3-phase balanced supply. Determine the phase currents and line currents. Also calculate the power drawn by the source.	CO4	7 Marks
	b)	The two wattmeter method is used to measure the power in a three phase load. The wattmeter readings are 400W and -35W. Calculate: i) The total active power. ii) Reactive power. iii) Power factor.	CO4	7 Marks

UNIT-IV

7	a)	Obtain the condition for maximum torque under running condition in Induction motor.	CO1	7 Marks
	b)	Draw and explain the slip-torque characteristics of a 3-phase induction motor.	CO1	7 Marks

(OR)

8	a)	Explain how rotating magnetic field in developed in 3-phase induction motors.	CO1	7 Marks
	b)	Derive the expression for induced EMF in an alternator.	CO2	7 Marks

UNIT-V

9		Explain the construction features and principle of operation of a shaded pole induction motor.	CO1	14 Marks

(OR)

10	a)	Explain with a neat diagram the working of a universal motor.	CO1	7 Marks
	b)	List the differences between single phase induction motor and 3-phase induction motor.	CO2	7 Marks

CODE No.: 16BT30301 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular/Supplementary Examinations November - 2018

ENGINEERING METALLURGY

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Enumerate various ores which yield non-ferrous metals.	CO1	6 Marks
	b)	State advantages and disadvantages of "Vacuum Induction Melting".	CO2	8 Marks
		(OR)		
2		Explain the construction and working of "Puddling Furnace".	CO4	14 Marks

UNIT-II

3		What is eutectoid system? Explain the system with an equilibrium diagram.	CO2	14 Marks
		(OR)		
4		Explain in detail Hume Rothery's rule for substitutional solid solution.	CO3	14 Marks

UNIT-III

5	a)	Explain hardening process in detail.	CO3	8 Marks
	b)	Discuss the limitations of Normalizing and Annealing.	CO3	6 Marks
		(OR)		
6		With a neat sketch, explain clearly the TTT diagram. Indicate its usefulness to the materials engineer in practice.	CO3	14 Marks

UNIT-IV

7		What is meant by Flame hardening? Explain method of Flame hardening.	CO3	14 Marks
		(OR)		
8		Explain about Optical Microscope with neat sketch.	CO5	14 Marks

UNIT-V

9	a)	Explain the concept of powder metallurgy.	CO4	7 Marks
	b)	Explain the term Compacting. What are the changes that take place during the process?	CO4	7 Marks
		(OR)		
10		Explain the principal steps involved in the process of powder metallurgy components.	CO6	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-16) Regular/Supplementary Examinations November - 2018

KINEMATICS OF MACHINERY

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define the following terms. i) Flexible link. ii) Open pair. iii) Lower pair. iv) Turning pair.	CO1	4 Marks
	b)	What are the different types of constrained motions? Explain.	CO1	10 Marks

(OR)

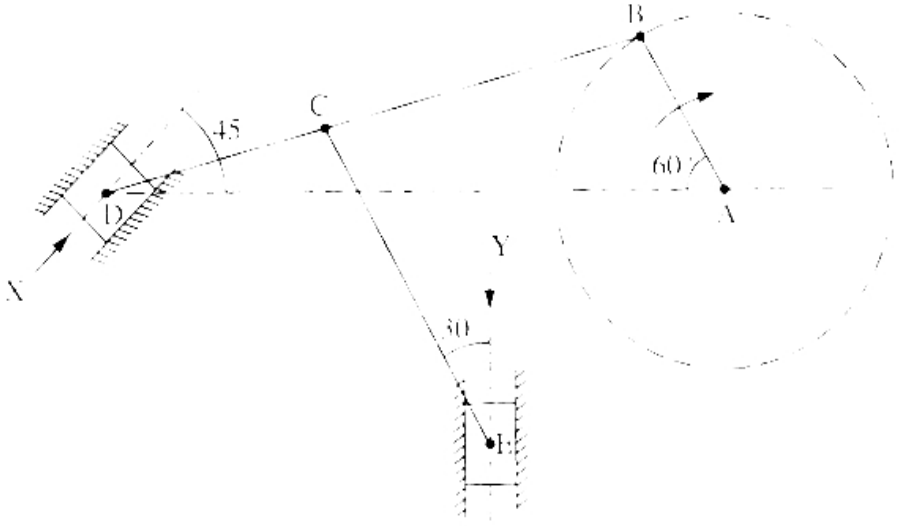
2		With the help of neat sketches, explain any two mechanisms which are the inversions of a double slider crank chain used in engineering practice.	CO1	14 Marks

UNIT-II

3		OABC is a four bar chain with fixed link OC. The lengths of the links are: OA = 40mm, AB = 150mm, BC = 80mm and OC = 150mm. The crank OA rotates at 120 r.p.m clockwise. Draw the velocity diagram when angle COA = 60^0 and find the angular velocity of the links AB and BC by instantaneous method.	CO2	14 Marks

(OR)

4		A mechanism in which AB is rotating uniformly at 180 r.p.m in the clockwise direction as shown in figure. Block D and E are working in frictionless guides. The dimensions of the mechanism are: AB = 450mm, BD = 1500mm, BC = 900mm and CE = 900mm. Draw the velocity and acceleration diagrams. Also determine velocity and acceleration of blocks D and E in their guides.	CO2	14 Marks



UNIT-III

5		How can you show that a watt mechanism traces an approximate straight line?	CO1	14 Marks

(OR)

6		What is fundamental equation of steering gears? Which steering gear fulfills this condition?	CO1	14 Marks

UNIT-IV

7	Two gear wheels mesh externally and are to give a velocity ratio 3:1. The teeth are involute form. Module = 6mm, addendum = one module, Pressure angle: 20^0. The pinion rotates at 100 r.p.m. Find: i) Number of teeth on pinion to avoid interference on it and the corresponding number of teeth on the wheel. ii) The length of path and arc of contact. iii) The number of pairs of teeth in contact. iv) The velocity of sliding at engagement, disengagement and pitch point.	CO3	14 Marks

(OR)

8	An internal wheel B with 80 teeth is keyed to a shaft F. A fixed internal wheel C with 82 teeth is concentric with B. A compound wheel D-E gears with the two internal wheels. D has 28 teeth and gears with C while E gears with B. The compound wheels revolve freely on a pin which projects from a disc keyed to a shaft A coaxial with F. If the wheels have the same pitch and the shaft makes 800 r.p.m, what is the speed of shaft F? Sketch the arrangement.	CO4	14 Marks

UNIT-V

9	A cam with minimum radius of 30mm, rotating counter clockwise at uniform speed is to be designed to give a knife edge follower at the end of a valve rod, motion described below: i) To raise the valve through 40 mm during 90^0 rotation of the cam. ii) To keep the valve fully raised through next 30^0 iii) To lower the valve during next 60^0 iv) To keep the valve closed during the rest of the revolution. The diameter of the cam shaft is 25mm. Draw the profile of the cam when the line of stroke is offset 15mm from the axis of the cam shaft. The displacement of the valve, while being raised and lowered, is to take place with uniform acceleration and uniform retardation. Determine the maximum acceleration of the valve rod when the cam shaft rotates at 80 r.p.m.	CO5	14 Marks

(OR)

10	Draw the cam profile for following conditions: Follower type = roller follower of 20mm radius, in-line; lift = 40mm; base circle radius = 50mm; out stroke with Uniform Velocity, for 120^0 cam rotation; dwell for 60^0 cam rotation; return stroke with SHM, for 90^0 cam rotation; dwell for the remaining period. Determine maximum velocity and acceleration during out stroke and return stroke if the cam rotates at 1200 r.p.m in clockwise direction.	CO6	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-16) Regular/Supplementary Examinations November - 2018

MANUFACTURING TECHNOLOGY

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain about various pattern allowances.	CO2	7 Marks
	b)	What are the constituents of molding sand? Explain how the constituents of molding sand influence properties.	CO2	7 Marks
		(OR)		
2	a)	Explain about various elements of gating system.	CO3	7 Marks
	b)	Describe various steps in cleaning of casting.	CO1	7 Marks

UNIT-II

3	a)	Compare precision investment casting and shell moulding from the stand point of process, product and applications.	CO4	7 Marks
	b)	Explain about various centrifugal casting techniques mentioning its applications.	CO5	7 Marks
		(OR)		
4	a)	Explain various types of die casting. State advantages, limitations and applications.	CO5	7 Marks
	b)	Explain six types casting defects mentioning causes and remedies.	CO4	7 Marks

UNIT-III

5	a)	Write a short note on ultrasonic welding.	CO1	7 Marks
	b)	Explain the principle of resistance welding process.	CO1	7 Marks
		(OR)		
6	a)	With the help of neat sketch, explain various equipment used in gas welding process.	CO1	7 Marks
	b)	Explain about various types of transformers used in arc welding process mentioning applications.	CO1	7 Marks

UNIT-IV

7	a)	Explain the principle of rolling process.	CO5	7 Marks
	b)	Write short notes on various types of hammers used for drop forging.	CO5	7 Marks
		(OR)		
8	a)	Differentiate forward and backward extrusion process.	CO1	7 Marks
	b)	Write a short note on various types of dies used in sheet metal working.	CO1	7 Marks

UNIT-V

9	a)	Describe various types of compression moulding techniques.	CO1	7 Marks
	b)	Would you use thermosetting plastics for injection moulding? Explain.	CO4	7 Marks
		(OR)		
10	a)	With the help of neat sketch, explain extruder used for processing of plastics	CO1	7 Marks
	b)	Describe blow moulding process.	CO1	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular/Supplementary Examinations November - 2018

STRENGTH OF MATERIALS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

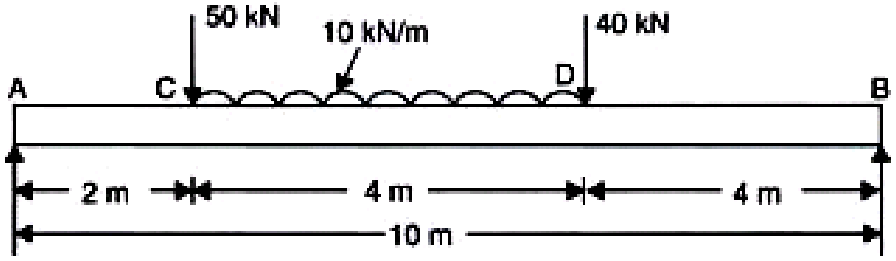
1	a)	Explain with neat sketch the stress-strain diagram for a mild steel specimen subjected to tensile force and indicate salient points.	CO6	6 Marks
	b)	Derive an expression for the elongation of a tapered bar of length 'L' whose diameter varies uniformly from 'd_1' at one end to 'd_2' at the other end when subjected to an axial pull of 'P'.	CO2	8 Marks

(OR)

2	a)	A steel rod of 20mm diameter and 200mm length is subjected to a 20kN tensile force. The extension is found to be 0.53mm and the decrease in diameter is equal to 0.0022mm. Determine: i) Young's modulus of elasticity. ii) Change in volume. iii) Poisson's ratio.	CO2	6 Marks
	b)	A steel rod of 15m long is at a temperature of 15°C. Find the free expansion of the length when the temperature is raised to 65°C. Also find the thermal stress produced when i) The expansion of the rod is prevented. ii) The rod is permitted to expand by 6mm. Take $\alpha = 12 \times 10^{-6}$/°C and E = 200 GPa.	CO2	8 Marks

UNIT-II

3		A simply supported beam of length 10m, carries uniformly distributed load and two point loads as shown in figure. Draw the S.F. and B.M. diagrams for the beam. Also calculate the maximum bending moment.	CO6	14 Marks



(OR)

4	a)	Briefly explain different types of beams, loads and supports	CO1	6 Marks
	b)	A cantilever beam AB of length L fixed at the end A and carrying a gradually varying load from zero at free end to 'w' per unit length at the fixed end. Calculate and plot the variation of shear force and bending moments over the length of the beam.	CO6	8 Marks

UNIT-III

5	a)	Starting from the fundamentals, derive the bending equation from the theory of simple bending.	CO1	7 Marks
	b)	Draw the shear stress distribution across T-section consisting of a flange 200mm x 20mm and web 380mm x 20mm, when subjected to a shear force of 100kN.	CO6	7 Marks

(OR)

6		A solid cylindrical shaft has to transmit 300kW at 250r.p.m. The maximum torque exceeds the mean torque by 30%. Suggest a suitable diameter of the shaft if the shear stress is not to exceed 40MPa and the angle of twist is limited to 6° in a length of 3m. Also calculate the percentage of saving in the material if the solid shaft is to be replaced by a hollow shaft of diameter ratio 0.8, the length, the material and the maximum shear stress being the same. Take G = 84 GPa.	CO3	14 Marks

UNIT-IV

7	a)	Derive the basic differential equation of the deflection curve and state assumptions.	CO1	7 Marks
	b)	A plane element in a boiler is subjected to tensile stresses of 400MPa on one plane and 200MPa on the other at right angles to the former. Each of the above stresses is accompanied by a shear stress of 100MPa. Determine the principal stresses and their directions. Show them on a sketch of properly oriented element.	CO4	7 Marks

(OR)

8		A steel girder of 8m length acting as a simply supported beam carries a u.d.l. of 'w' N/m throughout its span. If I = 30 x 10^{-6} m^4 and depth 390 mm. Calculate i) the magnitude of 'w' so that the maximum stress developed in the beam section does not exceed 92 MN/m^2, ii) the slope and deflection in the beam at a distance of 2.8 m from one end. Take E = 200 GN/m^2.	CO3	14 Marks

UNIT-V

9	a)	Derive the expressions for the hoop stress and longitudinal stress in case of thin cylindrical pressure vessel subjected to fluid pressure 'p'.	CO1	6 Marks
	b)	A cylindrical thin drum 80cm in diameter and 3m long has a shell thickness of 10mm. If the drum is subjected to an internal pressure of 2.5 N/mm^2, determine; i) Change in diameter. ii) Change in length. iii) Change in volume.	CO4	8 Marks

(OR)

10	a)	A seamless spherical shell is of 0.8m internal diameter and 4mm thickness. It is filled with fluid under pressure until its volume increases by $50cm^3$. Determine the fluid pressure, taking E = 2 x 10^5 N/mm^2 and Poisson's ratio = 0.3.	CO2	6 Marks
	b)	A thick cylinder 125mm inside diameter and 250mm outside diameter is subjected to an internal fluid pressure of 50MPa. Calculate the maximum and minimum intensities of circumferential stress and also sketch the distribution of circumferential stress intensity and radial stress intensity across the section.	CO2	8 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-16) Regular/Supplementary Examinations November - 2018

THERMODYNAMICS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	State zeroth law of thermodynamics and explain its importance.	CO1	6 Marks
	b)	A perfect gas undergoes a cycle comprises of three processes. It is first compressed isothermally from 1 bar and 27^0C to one eighth of its initial volume. The energy is then added at constant pressure, increasing the temperature of the gas and the cycle is completed by isentropic expansion to original condition. Take C_p = 1.25kJ/kgK and R = 0.5kJ/kgK. Calculate the maximum cycle temperature and pressure.	CO4	8 Marks

(OR)

2	a)	Obtain an expression for heat transfer during a polytropic process.	CO2	6 Marks
	b)	If a gas of volume 6000cm^3 and at a pressure of 100kPa is compressed quasistatically according to pV^2 = constant until the volume becomes 2000cm^3. Determine the final pressure and work transfer.	CO4	8 Marks

UNIT-II

3	a)	Apply the first law of thermodynamics for the following processes and comment on the result. i) Adiabatic. ii) Polytropic process.	CO2	4 Marks
	b)	A gas of mass 1.5kg undergoes a quasi-static expansion which follows a relationship p = a + bV, where 'a' and 'b' are constants. The initial and final pressures are 1000kPa and 200kPa respectively and the corresponding volumes are 0.20m^3 and 1.20m^3. The specific internal energy of the gas is given by the relation u = 1.5pv – 85kJ/kg where 'p' is in kPa and 'v' is in m^3/kg. Calculate the net heat transfer and the maximum internal energy of the gas.	CO4	10 Marks

(OR)

4	a)	Prove that Kelvin Planck's and Clausius statements of 2nd law are equal.	CO3	4 Marks
	b)	Two reversible heat engines A and B are arranged in series, A rejecting heat directly to B. Engine A receives 200kJ of heat at a temperature of 421^0C from a hot source, while the engine B is in communication with a cold sink at a temperature of 4.4^0C. If the work output of A is twice that of B, find; i) the intermediate temperature between A and B. ii) the efficiency of each engine.	CO4	10 Marks

UNIT-III

5	a)	Show that Entropy is a property of a system.	CO4	6 Marks
	b)	A heat engine receives reversibly 420kJ/cycle of heat from a source at 327^0C, and rejects heat reversibly to a sink at 27^0C. There are no other heat transfers. For each of the three hypothetical amounts of heat rejected in (i), (ii) and (iii) below, compute the cyclic integral of δQ/T. From these results show which case is reversible, irreversible and impossible. i) 210 kJ/cycle rejected. ii) 105 kJ/cycle. iii) 315 kJ/cycle rejected.	CO4	8 Marks

(OR)

6	a)	Obtain an expression for available energy from a finite energy source.	CO4	6 Marks
	b)	Exhaust gases leave an internal combustion engine at 800^0C and 1 atm, after having done 1050kJ of work per kg of gas in the engine (C_p of gas = 1.1 kJ/kgK). The temperature of the surroundings is 30^0C. i) How much available energy per kg of gas is lost by throwing away the exhaust gases? ii) What is the ratio of the lost available energy to the engine work?	CO4	8 Marks

UNIT-IV

7	a)	Define quality of steam and explain how you calculate the properties for a saturated mixture of water and steam.	CO2	6 Marks
	b)	A rigid closed tank of volume $3m^3$ contains 5kg of wet steam at a pressure of 200kPa. The tank is heated until the steam becomes dry saturated. Determine the final pressure and the heat transfer to the tank.	CO3	8 Marks

(OR)

8	a)	Obtain expression for entropy change in a polytropic process for an ideal gas.	CO3	6 Marks
	b)	Show that for an ideal gas, the slope of the constant volume line on the T-s diagram is more than that of the constant pressure line.	CO3	8 Marks

UNIT-V

9	a)	Sketch the Ericsson cycle on p-v and T-s charts and obtain expression for efficiency.	CO5	6 Marks
	b)	Two engines are to operate on Otto and Diesel cycles with the following data. Maximum temperature 1400K, exhaust temperature 700K. State of the air at the beginning of compression is 0.1MPa and 300K. Estimate the compression ratios, the maximum pressures and efficiencies of the respective cycle for 1kg/min of air flow.	CO5	8 Marks

(OR)

10	a)	Obtain an expression for thermal efficiency of an Otto cycle.	CO5	6 Marks
	b)	A gas turbine plant operates on the Brayton cycle between T_{min} = 300K and T_{max} = 1073K. Find the maximum work done per kg of air and the corresponding cycle efficiency. How does this efficiency compare with the Carnot efficiency operating between the same temp's.	CO5	8 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-16) Regular/Supplementary Examinations November - 2018

ELECTRONIC CIRCUIT ANALYSIS AND DESIGN

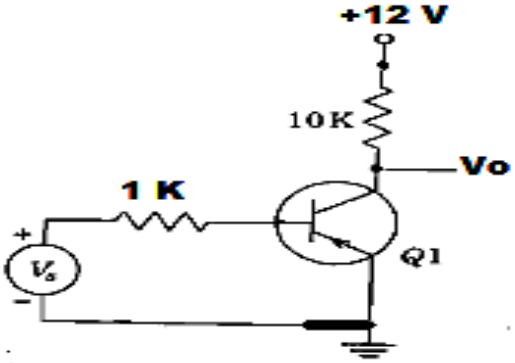
[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Derive the expression for voltage gain, current gain, input resistance and output resistance of an emitter follower using simplified h-parameter model.	CO2	7 Marks
	b)	Determine A_V, A_I, R_I, A_{VS} and A_{IS} of the following figure shown, given $h_{ie} = 1100\Omega$ and $h_{oe} = 24\mu A/V$, $h_{re} = 2.5 \times 10^{-4}$, $h_{fe} = 50$.	CO4	7 Marks



(OR)

2	a)	Illustrate different types of distortions that occur in amplifier circuits with neat diagrams.	CO1	7 Marks
	b)	Perform analysis on Darlington pair to obtain high current gain.	CO2	7 Marks

UNIT-II

3	a)	Given the following transistor measurements made at I_C = 5mA , V_{CE} = 10V and at room temperature: h_{fe} = 100, h_{ie}= 600Ω , magnitude of A_{ie} is 10 at 10MHz , C_C = 3 pF. Find f_β , f_T , C_e , $\mathbf{r_{b'e}}$ and $\mathbf{r_{bb'}}$.	CO4	8 Marks
	b)	Draw Hybrid-model for a transistor in the CE configuration and explain the significance of every component in this model.	CO1	6 Marks

(OR)

4	a)	The following low frequency parameters are known for a given transistor at I_C =10mA and V_{CE} =10 volts and at room temperature h_{ie}= 500Ω , $h_{oe}=10^{-5}$A/V , h_{fe}=100 , $h_{re}=10^{-4}$. Compute of all hybrid-π parameters**.**	CO4	7 Marks
	b)	Derive the expression for the CE short circuit current gain A_i with resistive load.	CO2	7 Marks

UNIT-III

5	a)	Select an appropriate feedback topology for the trans-resistance amplifier to have input and output impedances low.	CO5	7 Marks
	b)	Consider the ideal current shunt circuit. If I_s = 20μA, I_f = 19μA, R_0 = 20kΩ, β = 0.0025, determine the values of I_i ,I_o, A_i, A_{if}, R_{if} and R_{of}.	CO4	7 Marks

(OR)

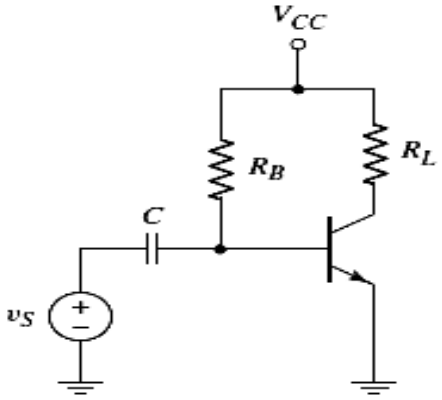
6	a)	Apply your engineering skills to develop an oscillator which is suitable for radio frequency range in communication systems. Give its frequency of oscillation.	CO6	7 Marks
	b)	Derive the expression for frequency of oscillation of RC-Phase shift oscillator with BJT.	CO2	7 Marks

UNIT-IV

7	a)	Classify the power amplifiers based on their operating point, distortion, conduction angle and maximum power efficiency.	CO1	7 Marks
	b)	Derive the expression for efficiency of transformer coupled amplifier.	CO2	7 Marks

(OR)

8	a)	With the help of a neat circuit diagram, explain the operation of a complementary symmetry configured class B power amplifier.	CO1	7 Marks
	b)	Design the values of R_L and R_B of the transistor in the common-emitter circuit in figure shown for V_{CC} = 30 V. The parameters are: β = 80, $P_{D,max}$ = 10 W, $V_{CE(sus)}$ = 30 V, and $I_{C,max}$ = 1.2 A.	CO3	7 Marks



UNIT-V

9	a)	What is a tuned amplifier? What is the fundamental difference between audio amplifiers and tuned amplifiers? How is bandwidth related to resonant frequency (fr) and the quality factor (Q).	CO1	7 Marks
	b)	Explain stagger tuning by using its frequency response. Give some possible applications.	CO1	7 Marks

(OR)

10	a)	Derive the expression for bandwidth of a single stage tuned amplifier.	CO2	7 Marks
	b)	Select an appropriate tuned amplifier to obtain high overall gain and illustrate with an example.	CO5	7 Marks

CODE No.:16BT30402 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular/Supplementary Examinations November - 2018

SIGNALS AND SYSTEMS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Find the Symmetric and Anti-Symmetric parts of the following signals. CO1 7 Marks

i) $x_1(t) = e^{-2t}\sin t$,

ii) $x_2(t) = a\sin(\omega t + \pi/3)$

iii) $x_3(n) = \alpha^n u(n)$

b) Determine whether the following signal is periodic or not? If periodic determine the fundamental period CO1 7 Marks

i) $x(t) = \cos(2\pi t) + \sin(\sqrt{3}t)$,

ii) $x[n] = e^{j(2\pi n/3)} - e^{j(6\pi n/7)}$.

(OR)

2 Determine whether the following systems are linear, time invariant, causal, static or not. CO1 14 Marks

i) $y(n) = x(n^2)$ ii) $y(n) = x^2(n)$

iii) $y(n) = ax(n) + b$ iv) $y(n) = e^{x(n)}$

UNIT-II

3 a) Write short notes on Direchelt conditions of fourier series. CO1 7 Marks

b) Find the trigonometric Fourier series for periodic signal x(t) shown in fig.1. CO1 7 Marks

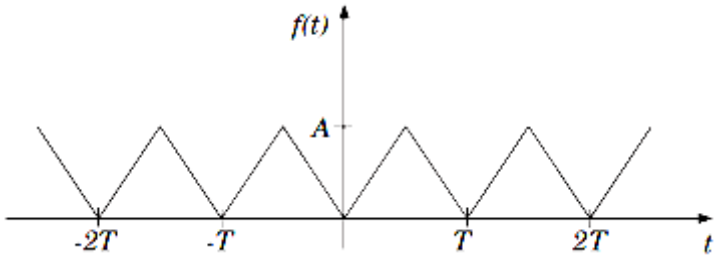
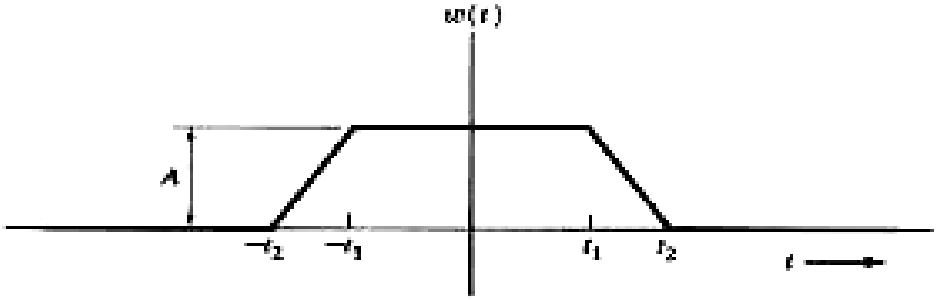


Fig.1

(OR)

4 a) Obtain Fourier transform of the trapezoidal pulse shown in fig.2. CO4 7 Marks



b) State and prove the following properties of Fourier transform. CO4 7 Marks

i) Time differentiation property.

ii) Frequency shifting property.

UNIT-III

5	a)	Examine how auto correction and average power are related for signal $x(t)$.	CO2	6 Marks
	b)	Define the terms related to discrete LTI systems. i) Inverse system, ii) Deconvolution.	CO1	8 Marks
		(OR)		
6	a)	If a function $x(t)$ has a power spectral density $S(W)$, find the power spectral density of i) Integral $x(t)$. ii) Derivative of $x(t)$. iii) Bring out the relation between them.	CO2	8 Marks
	b)	State the properties of auto correction function.	CO1	6 Marks

UNIT-IV

7	a)	Determine the inverse Laplace transform of $X(s) = \frac{2}{s(s+1)(s+2)^2}$.	CO4	7 Marks
	b)	Determine the inverse Laplace transform of $X(s) = \frac{1}{(s+2)(s^2+1)}$.	CO4	7 Marks
		(OR)		
8		State and prove the following properties of Laplace transform. i) Time differentiation. ii) Time integration. iii) Linearity. iv) Initial value theorem. v) Time scaling.	CO1	14 Marks

UNIT-V

9	a)	Explain the following sampling techniques. i) Natural sampling. ii) Flat top sampling.	CO1	7 Marks
	b)	Explain why over sampling is restored to in certain applications. How does it help?	CO2	7 Marks
		(OR)		
10	a)	State and prove the following properties of the Z-Transforms. i) Scaling. ii) Conjugation. iii) Time reversal.	CO1	7 Marks
	b)	Determine the step response of the system defined by the difference equation $\boldsymbol{y(n) - 0.6y(n-1) + 0.08y(n-2) = x(n-1) + x(n-2)}$ by applying Z-Transforms.	CO4	7 Marks

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CODE No.:16BT30403 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular/Supplementary Examinations November - 2018

SWITCHING THEORY AND LOGIC DESIGN

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Reduce the following Boolean expression. i) $F = YZ + \overline{X}\overline{Y}Z + XY\overline{Z}$ ii) $F = (X + Z)(W + X)(\overline{Y} + Z)(W + \overline{Y})$	CO5	8 Marks
	b)	Convert the given expression in the standard SOP form. i) $F(X,Y,Z) = \overline{X}(\overline{Y} + Z) + \overline{Z}$ ii) $F(X,Y,Z) = (X + \overline{Y})(X + Z)$	CO4	6 Marks

(OR)

2	a)	Deduce X from the following. i) $(BA0.C)_{16} = (X)_8$. ii) $(10101100)_2 = (X)_{16}$. iii) $(FFE.C)_{16}=(X)_2$. iv) $(7562)_8 = (X)_2$.	CO1	8 Marks
	b)	The hamming code 101101101 is received. Correct it if any errors. There are four parity bits and odd parity is used.	CO2	6 Marks

UNIT-II

3	a)	Simplify the following using K-map method. $F(A, B, C, D, E) = \Sigma(0, 2, 4, 6, 9, 11, 13, 15, 17, 21, 25, 27, 31)$.	CO4	9 Marks
	b)	Implement the following function with NAND gates. $F(x,y) = \Sigma(1, 2)$.	CO3	5 Marks

(OR)

4	a)	Simplify the following using Tabular method. $F(A , B , C , D , E) = \Sigma(0, 2, 4, 6, 9, 11, 14, 22, 25, 28, 31)$.	CO4	9 Marks
	b)	Implement the following function with NAND gates. $F(x, y, z) = \Sigma(0 , 6)$.	CO3	5 Marks

UNIT-III

5	a)	Implement the following Boolean function with a multiplexer. i) $F(A, B, C, D) = \sum(1, 2, 5, 8, 6, 10,12,14)$. ii) $F(A, B, C, D) = \sum(1, 2, 5, 6, 12)$.	CO4	8 Marks
	b)	Design and implement Full adder with two half adders and OR gate.	CO3	6 Marks

(OR)

6	a)	Define Multiplexer and Implement a 32x1 MUX by Using 4x1 Multiplexers.	CO4	7 Marks
	b)	Design Binary to Gray converter.	CO6	7 Marks

UNIT-IV

7	a)	Design a JK flip flop using AND gates and NOR gates. Explain the operation of the JK flip flop with the help of characteristic table and characteristic equation. Explain the Race around condition and also explain how to eliminate it.	CO5	7 Marks
	b)	Explain the operation of 5-stage twisted ring counter with circuit diagram, state transition diagram and state table.	CO5	7 Marks

(OR)

8	a)	Give the transition table for SR, JK, D and T flip flops. Convert an SR flip flop into D flip flop.	CO2	7 Marks
	b)	Draw the logic diagram of a SR latch using NOR gates. Explain its Operation using excitation table.	CO2	7 Marks

UNIT-V

9	a)	Design a BCD to excess-3 code converter and implement using suitable PLA.	CO3	7 Marks
	b)	Reduce the number of states in the state table and tabulate the reduced state table and give proper assignment.	CO4	7 Marks

PS	NS,Z	
	X=0	X=1
A	F, 0	B, 0
B	D, 0	C, 0
C	F, 0	E, 0
D	G, 1	A, 0
E	D, 0	C, 0
F	F, 1	B, 1
G	G, 0	H, 0
H	G, 1	A, 0

(OR)

10	a)	Design a combinational circuit using ROM. The circuit accepts 3-bit binary number and generates its equivalent excess-3 code.	CO3	7 Marks
	b)	Implement the following functions using a PROM. $G(W,X,Y,Z) = \sum(0, 1, 2, 3, 4, 5, 7, 8, 10, 11, 12, 13, 14, 15)$.	CO3	7 Marks

CODE No.:16BT30441 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular/Supplementary Examinations November - 2018

ANALOG ELECTRONIC CIRCUITS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the effect of Emitter Bypass capacitor on Low frequency response with suitable derivation.	CO1	7 Marks
	b)	For a CE amplifier calculate the mid frequency voltage gain and lower 3-dB point. The transistor parameters are h_{fe}=400, h_{ie}=10kΩ, R_S=600Ω, R_L=5kΩ, R_E=1kΩ, V_{CC}=12 V, R_1=15kΩ, R_2=2.2kΩ and C_E=50μF.	CO4	7 Marks
		(OR)		
2	a)	Draw the high frequency π-model for CE transistor and explain each parameter.	CO1	5 Marks
	b)	Derive the expression for CE short-circuit current gain.	CO1	9 Marks

UNIT-II

3	a)	Draw the block diagram of current series feedback amplifier and derive the expression for input and output impedance.	CO2	8 Marks
	b)	An amplifier has voltage gain with feedback of 100. If the gain without feedback changes by 20% and the gain without feedback should not vary more than 2%, determine the values of open loop gain A and feedback ratio β.	CO4	6 Marks
		(OR)		
4		Derive the expression for frequency of oscillations in Colpitts oscillator and conditions for oscillations with circuit diagram.	CO2	14 Marks

UNIT-III

5	a)	Classify power amplifiers based on bias point.	CO3	6 Marks
	b)	Analyze the working of transformer coupled class A power amplifier and derive the equation for efficiency.	CO3	8 Marks
		(OR)		
6	a)	Explain the working of class-B push-pull power amplifier and derive the equation for efficiency.	CO1	10 Marks
	b)	What are the drawbacks of transformer coupled power amplifiers?	CO1	4 Marks

UNIT-IV

7	a)	Sketch the response of low pass RC circuit for step input and derive the expression for rise time.	CO3	9 Marks
	b)	A 1 kHz square wave output from an amplifier has rise time tr = 350ns and tilt = 5 %. Determine the upper and lower 3-dB frequencies.	CO4	5 Marks
		(OR)		
8	a)	Give any two circuits of shunt clippers and explain their operation with the help of their transfer characteristics.	CO1	8 Marks
	b)	Symmetrical 50Hz square wave whose peak to peak excursions are ±100V with respect to ground is to be negatively clamped at 25V. Draw the necessary circuit diagram and output waveform for this purpose.	CO5	6 Marks

UNIT-V

9	a)	Derive the expression for frequency of oscillation of an Astable multi vibrator.	CO1	6 Marks
	b)	Calculate the component values of a mono stable multi vibrator developing an output pulse of 500μs duration. Assume $h_{FE(min)}$ = 25, $I_{CE(sat)}$ = 5 mA, V_{CC} = 10V and V_{BB} = -4V.	CO5	8 Marks
		(OR)		
10		Design a Schmitt trigger circuit for the following specification: UTP = 8V, LTP =5V, V_{CC} = 15V, $I_{C\,(sat)}$ = 2mA, $h_{FE(min)}$ = 25.	CO5	14 Marks

CODE No.: 16BT30501 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular/Supplementary Examinations November - 2018

COMPUTER ORGANIZATION

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Design a 4-bit combinational circuit decrementer using four Full-Adder circuits.	CO3	4 Marks
	b)	Explain the operation of arithmetic, logic and shift unit with the help of block diagram and function table.	CO2	10 Marks
		(OR)		
2	a)	Show the step-by-step multiplication process using Booth algorithm for +15 and -13 which are binary. Assume 5-bit registers that hold signed numbers. The multiplicand is +15 and the multiplier is -13.	CO4	10 Marks
	b)	List the hardware and draw the flowchart for adding and subtracting numbers in signed 2's complement representation.	CO3	4 Marks

UNIT-II

3	a)	What is the difference between a direct and an indirect address instruction? How many references to memory are needed for such type of instruction to bring an operand into a processor register?	CO1	5 Marks
	b)	Explain the way how the interrupt is handled by a computer with the help of flow chart.	CO1	9 Marks
		(OR)		
4	a)	Explain the operation of Microprogram Sequencer for control memory with a neat diagram.	CO1	7 Marks
	b)	Write the difference between computer instruction and microinstruction? Explain the mapping process from instruction code to microinstruction address.	CO1	7 Marks

UNIT-III

5	a)	What is the difference between Isolated I/O and Memory-Mapped I/O?	CO1	4 Marks
	b)	Why Input-Output interface is needed in a computer? Explain the working of Input-Output Interface unit with an example.	CO2	10 Marks
		(OR)		
6		Explain about various asynchronous data transfer methods that can be used in between CPU and I/O interface.	CO1	14 Marks

UNIT-IV

7		Explain: i) Structure of Synchronous DRAM. ii) Latency and Bandwidth. iii) Memory Controller Circuit. iv) Flash Memory.	CO4	14 Marks
		(OR)		
8	a)	Explain about Static Memories. Discuss about CMOS memory cell.	CO1	7 Marks
	b)	Design 2M x 32 memory using 512K x 8 memory chips and explain.	CO3	7 Marks

UNIT-V

9	a)	What is pipelining? Explain arithmetic pipeline for Floating Point Addition and Subtraction.	CO4	7 Marks
	b)	Consider the multiplication of two 40 x 40 matrices using a Vector Processor. i) How many products are there in each inner product and how many inner products must be evaluated? ii) How many Multiply-Add operations are needed to calculate the product matrix?	CO6	7 Marks

(OR)

10	a)	Explain time-shared common bus. Explain system bus structure for multiprocessors.	CO5	7 Marks
	b)	Explain the function of Omega-Switch network with a neat diagram.	CO5	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular/Supplementary Examinations November - 2018

DATA STRUCTURES

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Design an algorithm to count the number of nodes in a single linked list.	CO3	7 Marks
	b)	Explain and write a function to find the smallest and largest element of singly linked lists.	CO2	7 Marks
		(OR)		
2	a)	Can you write an algorithm that takes the first node in a linked list, reverse it and return the first node in the resulting linked list without recursion and with recursion?	CO3	7 Marks
	b)	Discuss in detail and compare various types of list with algorithm and example.	CO2	7 Marks

UNIT-II

3	a)	Distinguish between array, stack and queue.	CO2	7 Marks
	b)	List out the operations of Priority Queue and explain in detail.	CO1	7 Marks
		(OR)		
4	a)	List out the drawback of linear queue. How do overcome it? Explain.	CO2	7 Marks
	b)	Write down the algorithms to perform the operations on a stack and explain them.	CO1	7 Marks

UNIT-III

5		Write about the various representations of a binary tree in detail with suitable example.	CO1	14 Marks
		(OR)		
6		Write about various types of trees and in data structures with suitable example.	CO1	14 Marks

UNIT-IV

7		Explain the path and adjacency multi-list and explain representations of the path and adjacency multi-list graph with example.	CO1	14 Marks
		(OR)		
8		Write about the Insertion and Deletion operations in B-Trees.	CO1	14 Marks

UNIT-V

9		Construct sorting for the following numbers using Quick sort procedure and discuss the time complexity and space complexity of this algorithm. 42, 12, -8, 98, 67, 83, 08, 104, 07.	CO4	14 Marks
		(OR)		
10		Explain the different collision resolution strategies for hashing. State the advantages and disadvantages of each technique.	CO5	14 Marks

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CODE No.: 16BT30503 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular/Supplementary Examinations November - 2018

PYTHON PROGRAMMING

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What Are Syntax and Semantics? Explain the difference between Syntax Errors ***vs.*** Semantic Errors.	CO1	8 Marks
	b)	Write in detail about Operator precedence and Associativity with an example.	CO2	6 Marks
		(OR)		
2	a)	Explain with an example about Coercion ***vs.*** Type Conversion.	CO1	5 Marks
	b)	Evaluate the following expressions according to operator precedence. i) **10 - (5 * 4)**. ii) **40 % 6**. iii) **- (10/3) + 2**.	CO2	9 Marks

UNIT-II

3	a)	Explain the difference between sequential, selection, and iterative control with an example.	CO1	7 Marks
	b)	Write a python script to find biggest of three numbers using nested if.	CO2	7 Marks
		(OR)		
4	a)	Explain how list representation relates to list assignment in Python.	CO1	5 Marks
	b)	Write a Python script to check whether a given number is palindrome or not.	CO2	9 Marks

UNIT-III

5	a)	Explain the concept of parameter passing with an example.	CO1	6 Marks
	b)	Write a Python function named helloWorld that displays "Hello World, my name is name", for any given name passed to the routine.	CO4	8 Marks
		(OR)		
6	a)	Explain the appropriate use of Iteration ***vs.*** Recursion.	CO1	5 Marks
	b)	Write a program segment that reads a text file named original text and displays how many times the letter 'e' occurs.	CO3	9 Marks

UNIT-IV

7	a)	Give a set of instructions for controlling the turtle to create three concentric circles, each of different color and line width.	CO5	9 Marks
	b)	What is Inheritance? Explain the concept of class hierarchies with an example.	CO1	5 Marks
		(OR)		
8		Develop a simple program for bouncing ball using multiple turtles.	CO4	14 Marks

UNIT-V

9		Write a Python script creates a simple GUI tool that will convert a number of feet to the equivalent number of meters using Labels, TextFields and Buttons in TKinter (1 feet = 0.3048 Meters).	CO5	14 Marks
		(OR)		
10		How to reuse a GUI component with class and explain about Attaching and Extending class components.	CO2	14 Marks

CODE No.: 16BT31001 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular/Supplementary Examinations November - 2018

ELECTRICAL AND ELECTRONICS MEASUREMENTS

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is the reason behind the oscillations of the pointer in a PMMC when switch is closed and name some mechanism to reduce the oscillations?	CO1	7 Marks
	b)	Explain about PMMC instrument as an ammeter. How it can be used for AC? Explain in detail.	CO1	7 Marks
		(OR)		
2	a)	Discuss in details the types of errors and their causes in Moving Iron Instrument.	CO2	7 Marks
	b)	Design a multi-range ammeter for the ranges 10mA, 50mA and 75mA using a D'Arsonval movement having an internal coil resistance of 50Ω at a maximum current of 1mA.	CO2	7 Marks

UNIT-II

3	a)	"Using individual VOLTMETER and AMMETER is not an advisable to measure the power delivered to the load". Justify with mathematical expressions.	CO3	7 Marks
	b)	Compare the AC potensiometer with the DC potensiometer.	CO4	7 Marks
		(OR)		
4		Using the Phasor diagram of Single Phase Induction type energy meter derive the expression of electrical energy consumed. List out few errors during the process of energy measurement.	CO3	14 Marks

UNIT-III

5	a)	Wheatstone bridges can't be used for low range of resistances. Justify.	CO4	7 Marks
	b)	Select a suitable bridge to measure low range of resistance, explain its construction and derive the balance condition.	CO5	7 Marks
		(OR)		
6	a)	Derive the general equation for balance of an AC bridge and state the two essential conditions to make AC bridge balance.	CO4	7 Marks
	b)	Discuss the drawbacks of Desauty's bridge and explain how to overcome them with Schering bridge with mathematical support.	CO5	7 Marks

UNIT-IV

7	a)	Draw the basic block diagram of a digital frequency meter and explain in detail.	CO5	7 Marks
	b)	Explain the functioning of Stop and Start gate in the time base selector for the measurement of frequency.	CO5	7 Marks
		(OR)		
8		Describe with the help of neat circuit, the application of digital frequency meter for the following measurements i) Single and Multiple Period measurements. ii) Time interval measurements.	CO3	14 Marks

UNIT-V

9	a)	With a neat sketch, explain the LCD technology.	CO1	7 Marks
	b)	Using block diagram, explain the functioning of Digital Storage Oscilloscope.	CO2	7 Marks

(OR)

10	a)	Write short note on: i) Magnetic tape recorders. ii) CD/DVD recorders.	CO6	7 Marks
	b)	Elaborate why the study of spectrum analysis so important in analyzing signals.	CO6	7 Marks

CODE No.: 16BT31002 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular/Supplementary Examinations November - 2018

SENSORS AND TRANSDUCERS

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define Measuring Instrument and classify the Instruments with suitable examples.	CO1	6 Marks
	b)	The following were obtained from the measurement of the value of a resistor: 10.1Ω, 10.2Ω, 10.3Ω, 10.1Ω, 10.4Ω, 10.3Ω and 10.5Ω. Calculate the; i) Mean value. ii) Average deviation. iii) Standard deviation. iv) Variance.	CO2	8 Marks
		(OR)		
2	a)	What are the different stages of a generalized measurement system? Explain the role of each stage in detail.	CO1	7 Marks
	b)	List out few rules of representing UNITS in measurements system.	CO6	7 Marks

UNIT-II

3	a)	Define and Differential Transducer and Sensor with appropriate examples.	CO1	7 Marks
	b)	An instrument used for measuring displacement gives following values in five trials. Compare precision of each reading and identify highly precise measurement among the five trials.	CO2	7 Marks

Exp. No	1	2	3	4	5
Displacement (mm)	10.5	10.7	9.8	11	10.1

(OR)

4	a)	Define transfer function and give the examples for Zero, First and Second order measurement systems.	CO1	7 Marks
	b)	Derive the expression for the step response of a second order system.	CO2	7 Marks

UNIT-III

5	a)	Explain the principle of operation and measuring applications for: i) Thermistors. ii) LDR.	CO5	7 Marks
	b)	Derive the expression for "Guage factor" of a strain gauge.	CO3	7 Marks
		(OR)		
6		Explain in detail the various methods to measure the LINEAR DIAPLACEMENT using Capacitive Transduction. Derive the expression for output voltage and list out industrial applications.	CO3	14 Marks

UNIT-IV

7	a)	Explain the working principle of Eddy Current Sensors with the neat sketch.	CO5	7 Marks
	b)	List out few Piezo materials and derive the expression for sensitivity of Piezo crystal.	CO5	7 Marks
		(OR)		
8	a)	Write short notes on: i) ION SELECTIVE ELECTRODE. ii) SOLID STATE ELECTRODE.	CO5	7 Marks
	b)	Using characteristic performance of Photo Voltaic Cell, explain how it can be used for controlling applications.	CO5	7 Marks

UNIT-V

9	a)	Compare the photo semiconductor sensors with appropriate applications.	CO3	7 Marks
	b)	Descried the technology used in Fiber Optic Sensors with relevant diagram.	CO5	7 Marks

(OR)

10	a)	Does size of Sensors really matters when measuring an engineering parameter- Justify.	CO1	7 Marks
	b)	Describe the evolution and applications of SMART Sensors.	CO5	7 Marks

CODE No.: 16BT31201 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular/Supplementary Examinations November - 2018

DISCRETE MATHEMATICAL STRUCTURES

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Find the Conjunctive normal form of $\sim(p \vee q) \leftrightarrow (p \wedge q)$.	CO1	7 Marks
	b)	Is $[(p \rightarrow r) \wedge (q \rightarrow r)] \rightarrow [(p \vee q)] \rightarrow r]$ a Tautology or not? Justify.	CO5	7 Marks

(OR)

2	a)	Identify and explain the rules of inference to verify that the following argument is valid. If Clifton does not live in France, then he does not speak French Clifton does not drive Datsun. If Clifton lives in France, then he rides a bicycle. Either Clifton speaks French or he drives Datsun. Hence, Clifton rides a bicycle	CO3	7 Marks
	b)	Write the negation of following statement. For each integer x, if x is even, then $\boldsymbol{x^2 + x}$ is even.	CO1	7 Marks

UNIT-II

3	a)	If the relations R and S are reflexive, symmetric and transitive show that R∩S is also reflexive, symmetric and transitive.	CO2	7 Marks
	b)	Determine the value of $fog, gof, f^{-1}og$ and $g^{-1}of^{-1}$ for the functions f and g: $R \rightarrow R$ (set of real numbers) defined by $\boldsymbol{f(x) = x^2 - 2, g(x) = x + 4.}$	CO4	7 Marks

(OR)

4	a)	Define a Poset. Illustrate the Poset diagram of (P(S), ⊆) where P(S) is the power set of $S = \{a, b, c\}$.	CO1	7 Marks
	b)	Determine that the poset{ (1, 3, 6, 9, 123), / }is a Lattice and prove that it is a distributive Lattice.	CO4	7 Marks

UNIT-III

5	a)	Examine whether the set N of natural numbers is a semi group with respect to the binary operation defined by $x*y = \max\{x, y\}$ for all $x, y \in$ N or not.	CO2	7 Marks
	b)	State and prove Lagrange's theorem.	CO1	7 Marks

(OR)

6	a)	Define algebraic structure. For the algebraic system (**I**, +, ×) where I is the set of integers, list the important properties of these operations '+', '×'.	CO1	7 Marks
	b)	Let $S = \{a, b, c\}$, and let * denote a binary operation on S given by table. i) Also let $P=\{1,2,3\}$ and ⊕ be a binary operation on P given by table. ii) Show that $(S, *)$ and $(P, \oplus)$ are Isomorphic.	CO5	7 Marks

table 1

*	a	b	c
a	a	b	c
b	b	b	c
c	c	b	c

table 2

⊕	1	2	3
1	1	2	1
2	1	2	2
3	1	2	3

UNIT-IV

7	a)	Show by Mathematical induction that x-y is a factor of the polynomial $x^n - y^n$ where n ≥0.	CO1	5 Marks
	b)	A computer password consists of a letter of the alphabet followed by 3 or 4 digits. Find: i) The total number of passwords that can be created. ii) The number of passwords in which no digit repeats.	CO4	4 Marks
	c)	Find the coefficient of x^{20} in $(x^3 + x^4 + x^5 + \ldots..)^5$.	CO3	5 Marks

(OR)

8	a)	Solve the recurrence relation. $u_n - 4u_{n-1} - 12u_{n-2} = 0$ for $n \geq 2$, $u_0 = 4$, $u_1 = 16/3$	CO4	7 Marks
	b)	If a_n is solution of the recurrence relation $a_{n+1} = k\ a_n$ for n ≥ 0 and a_3=58/48, a_5=1378/2408, what is k.	CO2	7 Marks

UNIT-V

9	a)	Determine whether the following graphs are isomorphic.	CO2	7 Marks

	b)	Discuss the following by giving of a graph which contains. i) An Eulerian circuit that is also a Hamilton circuit. ii) An Eulerian circuit, but not a Hamilton circuit. iii) A Hamilton circuit , but not an Eulerian circuit.	CO2	7 Marks

(OR)

10	a)	Analyze depth first search algorithm with an example.	CO4	7 Marks
	b)	Define Minimum Spanning Tree**.** Explain Prim's algorithm with an example.	CO3	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular/Supplementary Examinations November - 2018

OPERATING SYSTEMS

[Computer Science & Engineering, Information Technology, Computer Science & Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe three general methods for passing parameters to the operating system.	CO1	5 Marks
	b)	Describe the actions taken by a kernel to context-switch between processes.	CO1	9 Marks
		(OR)		
2	a)	What are the five major activities of an operating system with regard to file management?	CO1	7 Marks
	b)	List out the benefits of multithreaded programming. Briefly explain each.	CO2	7 Marks

UNIT-II

3	a)	What is Critical Section problem? What are the different solutions to critical section problem?	CO2	7 Marks
	b)	What is semaphore? Describe how it enhances concurrency.	CO2	7 Marks
		(OR)		
4	a)	Consider a system consists of 4 resources of the same type that are shared by 3 process each of which needs at most 2 resources, show that the system is in deadlock free.	CO3	7 Marks
	b)	Consider the Dining Philosophers problem with n philosophers but with n+1 forks; the extra fork is in the middle of the table and can be used by any philosopher. Is deadlock possible?	CO3	7 Marks

UNIT-III

5	a)	Why are segmentation and paging sometimes combined into one scheme?	CO3	7 Marks
	b)	Discuss the LRU (Least Recently Used) page replacement algorithm with an example.	CO3	7 Marks
		(OR)		
6	a)	Explain why sharing a reentrant module is easier when segmentation, is used than when pure paging is used.	CO3	7 Marks
	b)	What is Swapping? What is the need for swapping?	CO3	7 Marks

UNIT-IV

7	a)	What are the advantages of the variant of linked allocation that uses a FAT to chain together the blocks of a file?	CO1	6 Marks
	b)	Discuss the relative advantages and disadvantages of sector sparing and sector slipping.	CO1	8 Marks
		(OR)		
8	a)	Discuss how performance optimizations for file systems might result in difficulties in maintaining the consistency of the systems in the event of computer crashes.	CO1	7 Marks
	b)	Explain the goals and principles of protection.	CO1	7 Marks

UNIT-V

9	a)	How are access matrix facility and the role based access control facility similar? How do they differ?	CO5	7 Marks
	b)	What are the advantages and disadvantages of supporting memory mapped I/O to device control registers?	CO1	7 Marks
		(OR)		
10	a)	Draw and explain a typical PC bus structure.	CO1	7 Marks
	b)	What are the various kinds of performance overheads associated with servicing an interrupt?	CO1	7 Marks

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CODE No.: 16BT41202 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular/Supplementary Examinations November - 2018

JAVA PROGRMMING

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Why java is important to the internet?	CO1	3 Marks
	b)	Explain the primitive data types in java.	CO1	6 Marks
	c)	Write a java code demonstrating parameterized constructors.	CO3	5 Marks
		(OR)		
2	a)	Explain about the iteration statements in java with syntax.	CO1	6 Marks
	b)	Write java program to print the Armstrong numbers in a given interval.	CO6	5 Marks
	c)	Demonstrate any three string handling methods.	CO1	3 Marks

UNIT-II

3	a)	Write java program to demonstrate the uses of final keyword in java.	CO1, CO3	6 Marks
	b)	Define package. Explain about the CLASSPATH.	CO1	4 Marks
	c)	How can you create and implement interface? Write a suitable code.	CO1, CO3	4 Marks
		(OR)		
4	a)	Explain abstract class and abstract method with a java program.	CO1, CO2	6 Marks
	b)	What is the importance of packages?	CO1	4 Marks
	c)	Write a java code on extending interfaces.	CO3	4 Marks

UNIT-III

5	a)	What is an Exception? Explain Exception handling mechanism with suitable program.	CO1	8 Marks
	b)	Develop a java program to demonstrate the inter-thread communication and explain it.	CO1, CO6	6 Marks
		(OR)		
6	a)	How many exceptions can you associate with a single try block? Explain.	CO1	3 Marks
	b)	What are thread priorities? Write a java program to demonstrate thread priorities.	CO1, CO3	5 Marks
	c)	How can you create multiple threads? Explain with a java program.	CO1, CO3	6 Marks

UNIT-IV

7	a)	Explain in detail about the Layout managers in AWT.	CO4	9 Marks
	b)	Write a java program to demonstrate passing parameters to an Applet.	CO4	5 Marks
		(OR)		
8	a)	What is java collection framework? Demonstrate ArrayList class and LinkedList class with a suitable java program.	CO1, CO6	10 Marks
	b)	Explain Applet architecture.	CO4	4 Marks

UNIT-V

9	a)	Explain delegation event model in detail.	CO1	5 Marks
	b)	Explain the classes and interfaces of javax.servlet package.	CO5	9 Marks
		(OR)		
10	a)	What is the role of event listeners in event handling? Write a java program using event listeners for handling keyboard events.	CO1, CO4	8 Marks
	b)	Explain the life cycle methods of Servlet with a java code.	CO5	6 Marks

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CODE No.: 16BT50502 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular/Supplementary Examinations November - 2018

LINUX PROGRAMMING

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	List out the programming languages available for Linux system.	CO1	10 Marks
	b)	Write Linux program that uses the environ variable to print out the environment variables.	CO2	4 Marks
		(OR)		
2	a)	Write and explain the characteristics of Unix Operating System.	CO1	7 Marks
	b)	Explain about different functions associate with time and date.	CO2	7 Marks

UNIT-II

3	a)	Give brief description about Input and output Redirection.	CO1	7 Marks
	b)	Write a shell script to calculate Factorial of a user specified number.	CO6	7 Marks
		(OR)		
4	a)	Give brief description about the flow – control structures present in shell.	CO1	7 Marks
	b)	Write shell script to print nos as 5,4,3,2,1 using for loop.	CO3	7 Marks

UNIT-III

5	a)	Explain fseek, fopen, fclose system call in detail.	CO2	7 Marks
	b)	What is File? Explain File system structure in Linux.	CO1	7 Marks
		(OR)		
6	a)	Explain about different formatted output commands.	CO1	7 Marks
	b)	Write a C program that takes one or more file or directory names as input and reports the following information on the file: i) File type. ii) Number of links. iii) Read, write and execute permissions. iv) Time of last access.	CO4	7 Marks

UNIT-IV

7	a)	Explain the role of the following system calls with respect to process: i)fork() ii) wait() iii) exec()	CO2	7 Marks
	b)	What is a Zombie Process? Explain the importance of zombie process in Linux.	CO6	7 Marks
		(OR)		
8	a)	What is a signal? Why we need them? Explain signal function in detail.	CO1	8 Marks
	b)	Write about alarm and pause functions.	CO2	6 Marks

UNIT-V

9	a)	Explain how to achieve the inter process communication by using FIFOs.	CO1	8 Marks
	b)	Write about popen() and pclose() functions.	CO2	6Marks
		(OR)		
10	a)	Explain TCP client – server interaction using sockets.	CO5	8 Marks
	b)	How the addresses are associated with Sockets? Explain in detail.	CO1	6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

PROBABILITY DISTRIBUTIONS AND STATISTICAL METHODS

[Civil Engineering, Mechanical Engineering, Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) By the technique of mathematical expectations, evaluate variance of X, if the probability distribution of the random variable X is given by — CO5, CO4 — 7 Marks

X	-1	0	1	2	3
P(X = x)	0.3	0.1	0.1	0.3	0.2

b) CO2 7 Marks

Given that $f(x) = \begin{cases} \frac{1}{16}(3+x)^2 - 3 \le x < -1 \\ \frac{1}{16}(6-2x^2), if -1 \le x < 1 \\ \frac{1}{16}(3-x)^2, if 1 \le x \le 3 \\ 0, \quad \text{otherwise} \end{cases}$

Check whether f(x) is a density function or not. If so, find the mean of X.

(OR)

2 a) Show that variance of a random variable X is given by $\sigma^2 = E(x^2) - [E(x)]^2$ and also find the variance of $(ax + b)$. — CO4 — 7 Marks

b) A continuous random variable X has a p.d.f given by — CO4 — 7 Marks

$$f(x) = \begin{cases} kxe^{-\lambda x}, x \ge 0, \lambda > 0 \\ 0 \quad , \text{otherwise} \end{cases}$$

Determine the constant k, and obtain the mean and variance of X.

UNIT-II

3 a) A hospital switch board receives an average of 4 emergency calls in a 10-minute interval. Applying appropriate probability techniques, estimate the probability that: — CO5, CO4 — 7 Marks

i) there are atmost 2 emergency calls in a 10 minute interval.
ii) there are exactly 3 emergency calls in a10 minute interval.

b) The mean height of 500 students is 151cm and the standard deviation is 15cm, assuming that the heights are normally distributed, calculate how many students heights lie between120 and 155cm — CO4 — 7 Marks

(OR)

4 a) 20% of items produced from a factory are defective. Estimate the probability that in a sample of 5 chosen at random, — CO4 — 7 Marks

i) None is defective. ii) One is defective. iii) P $(1 < x < 4)$.

b) In a sample of 1000 cases, the mean of a certain test is 14 and standard deviation is 2.5. Assuming the distribution to be normal, Calculate — CO4 — 7 Marks

i) How many students score between12 and 15.
ii) How many score above 18.
iii) How many score below 8.

UNIT-III

5 a) Explain the method for computing. — CO1 — 7 Marks

i) $\overline{X}$ -chart. ii) R – chart.

b) Estimate the mean values of the variable X and Y and correlation — CO4 — 7 Marks

coefficient from the following regression equations.
$2Y - X - 50 = 0$; $3Y - 2X - 10 = 0$.

(OR)

6 a) Evaluate the Karl Pearson's coefficient of correlation from the following data. CO4 7 Marks

Wages	100	101	102	102	100	99	97	98	96	95
Cost of Living	98	99	99	97	95	92	95	94	90	91

b) The number of defects on 15 items are given below. CO2, CO3 7 Marks

Item No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
No. Of Defectives	2	0	4	1	0	8	0	1	2	0	6	0	2	1	0

Design a suitable control chart for the given data and comment on the state of control.

UNIT-IV

7 a) Measuring specimens of nylon yarn taken from two machines, it was found that 32 specimens from 1st machine had a mean denier of 9.67 with a standard deviation of 1.81 while 36 specimens from a 2nd machine had a mean denier of 7.43 with a standard deviation 1.48. Assuming the population are normal, test the hypothesis CO4 7 Marks
$H_0 : \mu_1 - \mu_2 = 1.5$ against $H_1 : \mu_1 - \mu_2 > 1.5$ at 0.05 level of significance.

b) Explain about (i) Critical region (ii) Two tailed test. CO1 7 Marks

(OR)

8 a) In a hospital out of 1000 babies, 480 females were born in a week. Using statistical technique of single proportion, analyze whether the hypothesis males and females are born in equal number and justify the answer. CO2, CO5 7 Marks

b) A sample of 400 items is taken from a population whose standard deviation is 10. The mean of the sample is 40. Analyze and conclude whether the sample has come from a population with mean 38 also calculate 95% confidence interval for the population. CO2 7 Marks

UNIT-V

9 a) A random sample of 6 steel beams has a mean compressive strength of 58392 psi with a standard deviation of 648. Use this information at level of significance ($\alpha = 0.05$) to test whether the true average compressive strength of the steel from which this sample came is 58,000 psi. Assume normally. CO4 7 Marks

b) By the technique of designing Poisson distribution to the following data, find its goodness of fit at level of significance 0.05. CO5 7 Marks

x	0	1	2	3	4
f	419	352	154	56	19

(OR)

10 a) A random sample of 10 boys had the following I.Q's: 70, 120, 110, 101, 88, 83, 95, 98, 107 and 100. CO4 7 Marks
i) Do these data support the assumption of a population mean I.Q. of 100?
ii) Find a reasonable range in which most of the mean I,Q. values of samples of 10 boys lie.

b) In one sample of 8 observations from a normal population, the sum of the squares of deviations of the sample values from the sample mean is 84.4 and in another sample of 10 observations it was 102.6. Test at 5% level whether the population has the same variance or not. CO4 7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations June – 2019

SPECIAL FUNCTIONS AND COMPLEX ANALYSIS

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define Beta function and applying it show that $\beta(m+1, n) + \beta(m, n+1) = \beta(m, n)$	CO1, CO4	7 Marks
	b)	Evaluate the integrals i) $\int_0^1 x^7 (1-x)^5 \, dx$ ii) $\int_0^{\pi/2} \sin^{7/2}\theta \cos^{3/2}\theta \, d\theta$ making use of beta and gamma functions.	CO4	7 Marks
		(OR)		
2		Define Bessel function $J_n(x)$. Express $J_{1/2}(x)$, $J_{-1/2}(x)$ in terms of sin x and cos x and hence or otherwise show that $\left[J_{1/2}(x)\right]^2 + \left[J_{-1/2}(x)\right]^2 = \frac{2}{\pi x}$.	CO1, CO4	14 Marks

UNIT-II

3		Define velocity potential and find the velocity potential ϕ in a two dimensional flow of a fluid whose stream function is $\psi = \frac{-y}{x^2+y^2}$.	CO4	14 Marks
		(OR)		
4		Show that $\left[\frac{\partial^2}{\partial x^2} + \frac{\partial^2}{\partial y^2}\right] \left|\text{Real } f(z)\right|^2 = 2\left|f'(z)\right|^2$, if $f(z)$ is a regular function of z.	CO3	14 Marks

UNIT-III

5	a)	Evaluate contour integral $\int_c \frac{\log z}{(z-1)^3} dz$ where C is $\left\|z-1\right\| = \frac{1}{2}$ using Cauchy's Integral formula.	CO4	7 Marks
	b)	Express $f(z) = e^z$ as a Taylor's series expansion about z = 1 and z = 3.	CO1	7 Marks
		(OR)		
6	a)	Construct a power series for $f(z) = \frac{z}{z^4+9}$ about the point $z = 0$.	CO3	7 Marks
	b)	State Cauchy's Integral theorem and applying it show that $\int_C \frac{dz}{z^2(z^2+16)} = 0$ where $C: 1 \le \left|z\right| \le 2$.	CO1, CO4	7 Marks

UNIT-IV

7		Define residue of $f(z)$ at pole $z = a$ of order m. Applying the calculus of residues, show that $\int_0^\infty \frac{1}{1+x^6} dx = \frac{\pi}{3}$.	CO1, CO4	14 Marks

(OR)

8	a)	Define simple pole and reside at the simple pole. Find the poles and corresponding residues of $f(z) = \frac{z+1}{z^2(z-2)}$.	CO1, CO4	7 Marks
	b)	Evaluate $\oint_c \frac{2e^z}{z(z-3)}dz$ where C: $\|z\| = 2$ by applying theory of residues.	CO4	7 Marks

UNIT-V

9	a)	Check whether the mapping $w = \cos z$ is conformal or not.	CO4	7 Marks
	b)	Construct an image for the region in the z-plane between the lines y=0 and y=$\frac{\pi}{2}$ under the transformation $\boldsymbol{w = e^z}$.	CO3	7 Marks

(OR)

10	a)	Construct a Bilinear transformation which maps the points $z = 1, i, -1$ onto the points $w = i, 0, -i$ and hence find the image of $\|z\| < 1$ under this transformation.	CO3	7 Marks
	b)	Construct an image of the disc $\|z\| < 1$ under the transformation $w = \frac{1+iz}{1-iz}$.	CO3	7 Marks

CODE No.: 16BT3HS01 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

ENVIRONMENTAL STUDIES

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss the major uses and causes of forests.	CO1	7 Marks
	b)	How can you manage the non-renewable natural resources?	CO5	7 Marks
		(OR)		
2	a)	Illustrate one international and inter-state water conflict.	CO2	7 Marks
	b)	How does land degradation take place? Write its adverse effects.	CO1	7 Marks

UNIT-II

3	a)	What are food chains and food webs? Give examples and discuss their significance.	CO1	7 Marks
	b)	Difference between insitu and exsitu conservation of biodiversity.	CO2	7 Marks
		(OR)		
4	a)	State the solutions to the environmental problems when a threat occurs to an ecosystem.	CO4	7 Marks
	b)	List out the characteristic features of food webs.	CO1	7 Marks

UNIT-III

5	a)	Summarize the effects of CO, SO2 and Hydro carbons on human beings.	CO2	7 Marks
	b)	List the appropriate techniques to prevent pollution of our oceans.	CO5	7 Marks
		(OR)		
6		Give a comparative account of urban and industrial waste in terms of their sources, characteristics and management and disposal methods.	CO3	14 Marks

UNIT-IV

7	a)	Illustrate the major limitations to successful implementation of our environmental legislation.	CO8	7 Marks
	b)	Summarize the impact due to resettlement and rehabilitation of people.	CO6	7 Marks
		(OR)		
8	a)	Explain briefly about the steps taken in India for sustainable development.	CO7	7 Marks
	b)	Write about air and water act in detail.	CO1	7 Marks

UNIT-V

9	a)	What is the universal declaration of Human Rights? What is its importance in achieving the goals of equity, justice and sustainability?	CO8	7 Marks
	b)	Write explanatory note on women and child welfare.	CO1	7 Marks
		(OR)		
10		Visit to a local industrial polluted area and prepare a document.	CO9	14 Marks

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CODE No.: 16BT3HS02 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations June – 2019

MANAGERIAL ECONOMICS AND PRINCIPLES OF ACCOUNTANCY

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

	UNIT-I		
1	Critically analyze the statement "Managerial Economics is interdisciplinary in nature."	CO1, CO3	14 Marks
	(OR)		
2	Give a brief note on various types of elasticity of demand.	CO1	14 Marks
	UNIT-II		
3	Illustrate Law of diminishing marginal returns with graph.	CO1	14 Marks
	(OR)		
4	Discuss the following in BEA. i) Underlying Assumptions; ii) Merits; iii) Demerits.	CO1	14 Marks
	UNIT-III		
5	Which market has P=AR=MR as it's characteristic feature? Illustrate with example.	CO3	14 Marks
	(OR)		
6	"Perfect markets are ideal, yet significant". Justify.	CO1, CO3	14 Marks
	UNIT-IV		
7	Explain with suitable examples – i) Types of accounts; ii) Principles of accounts.	CO1	14 Marks
	(OR)		
8	For the following transactions pass necessary Journal entries in the books of Mahesh for the month of October 2016. Oct. 1 Mahesh commenced a business with Cash Rs. 60.000/- Oct. 5 Bought goods from Kailesh Rs. 36,400/- Oct. 7 Cash withdrawn from bank for personal use Rs. 12,400/- Oct. 9 Cash Paid to Kailesh Rs. 36,000/- in full settlement of his account. Oct. 16 Sold goods to Bhadra Rs. 44,600/- Oct. 18 Commission paid by Mahesh Rs. 2,800/- Oct. 25 Cash received from Bhadra Rs. 44, 000/- in full settlement of her account. Oct. 31 Salaries paid through cheque Rs. 16,800/-	CO2, CO5, CO6	14 Marks
	UNIT-V		
9	Compare and Contrast "Manual Accounting Vs Computerized Accounting".	CO1, CO2	14 Marks
	(OR)		

10 The Trail balance of Kamal as on March 31, 2008 revealed the following balances: CO4, CO5, CO6 14 Marks

Particulars	Amount Rs.	Particulars	Amount Rs.
Plant & machinery	160,000	Capital Account	200,000
Purchases	136,000	Sales	250,000
Sales returns	2,000	Purchase returns	6,550
Opening Stock	60,000	Discount Received	1,600
Discount Allowed	700	Sundry Creditors	50,000
Bank charges	150		
Sundry debtors	90,000		
Salaries	13,600		
Wages	20,000		
Freight	1,500		
Carriage outwards	2,400		
Rent and Rates	4,000		
Advertisements	4,000		
Cash in hand	13,800		
	508,150		**508,150**

Adjustments:

1) Closing Stock was valued at Rs. 70,000/-
2) Provide for depreciation on plant @10% per Annum.
3) Salaries yet to be paid Rs.500/-

Prepare Trading, Profit and Loss A/c for the year 31st March 2008 and a balance sheet as on that date.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

FLUID MECHANICS AND HYDARULIC MACHINERY

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the various devices used for measurement of pressure and explain with a neat sketch?	CO1	7 Marks
	b)	What are the advantages and limitation of manometers and explain Bourdon tube pressure gauge with a neat sketch?	CO1	7 Marks
		(OR)		
2	a)	Derive an expression for total pressure and centre of pressure when the plane is immersed vertically.	CO2	7 Marks
	b)	Define total pressure and centre of pressure and a rectangular plate 2m x 4m is vertically immersed in water in such a way that 2m side is parallel to the water surface and 2.5m below it. Find the total pressure on the rectangular plate.	CO2	7 Marks

UNIT-II

3	a)	State momentum equation and its applications. In a 45 degrees bend a rectangular air duct of $1m^2$ cross-sectional area is gradually reduced to 0.5 sq.m area. Find the magnitude and direction of force required to hold the duct in position if the velocity of flow at 1 sq.m section is 10m/s and pressure is 30 kN/m^2. Take the specific weight of air as 0.0116 kN/m^3.	CO2	7 Marks
	b)	250 litres/sec of water is flowing in a pipe having a diameter of 300mm. If the pipe is bent by 135 degrees, find the magnitude and direction of the resultant force on the bend. The pressure of the water flowing is $400kN/m^2$.	CO2	7 Marks
		(OR)		
4	a)	Describe different parts of Venturimeter with a neat sketch and derive an expression to determine rate of flow through Venturimeter.	CO2	7 Marks
	b)	A horizontal Venturimeter with inlet and throat diameters 300mm and 100mm respectively is used to measure the flow of water. The pressure intensity at inlet is $130kN/m^2$ while vacuum pressure head at the throat is 350mm of mercury. Assuming 3 percent of head lost in between the inlet and throat, find the value of coefficient of discharge and rate of flow.	CO5	7 Marks

UNIT-III

5	a)	Define hydraulic gradient line and total energy line and explain pipes in series with a neat sketch.	CO1	7 Marks
	b)	A pipe line of 600mm diameter is 1.5km long. To increase the discharge another line of the same diameter is introduced parallel to the first in the second half of the length. If f = 0.01 and head at inlet is 300mm, calculate the increase in discharge. Neglect minor losses.	CO3	7 Marks
		(OR)		
6	a)	Define dimensional analysis and explain the principle of dimensional homogeneity. Describe the procedure for obtaining the relationship between dependent and independent variables using Rayleigh's method.	CO4	7 Marks
	b)	Derive the relationship for drag force on a smooth sphere of diameter D immersed in a liquid of mass density ρ and dynamic viscosity μ and moving with a velocity V using Rayleigh's method.	CO2	7 Marks

UNIT-IV

7	a)	Describe specific energy diagram with a neat sketch. Water flows at a velocity of 1m/s and a depth of 2m in an open channel of rectangular cross section 3m wide. At certain section the width is reduced to 1.8m and the bed is raised by 0.65m. Will the upstream depth be affected, if so to what extent?	CO2	7 Marks
	b)	In a rectangular channel of 0.5m width, a hydraulic jump occurs at a point where depth of water flow is 0.15m and Froude number is 2.5. Determine specific energy, the critical and subsequent depths, loss of head and energy dissipated.	CO2	7 Marks

(OR)

8	a)	Define varied flow and its types. Derive dynamic equation of gradually varied flow and list out assumptions.	CO2	7 Marks
	b)	Explain characteristics of different flow profiles with a neat sketch.	CO1	7 Marks

UNIT-V

9	a)	List draft tubes and explain draft tube theory. A Kaplan turbine develops 9000kW under a net head of 7.5m and speed ratio and flow ratios are 2.2 and 0.66 respectively. Diameter of boss is 0.35 times the external diameter of the wheel. The overall efficiency of the turbine is 86%. Determine diameters of runner and boss, synchronous speed and specific speed of the runner.	CO2	7 Marks
	b)	Derive an expression for specific speed of a turbine and explain unit quantities. A Kaplan turbine working under a head of 25m develops 16000kW shaft power. The outer diameter of the runner is 4m and hub diameter is 2m. The guide blade angle is 25 degrees. The hydraulic and overall efficiency are 90% and 85% respectively. If the velocity of whirl is zero at outlet, determine runner vane angles at inlet and outlet and speed of turbine.	CO2	7 Marks

(OR)

10	a)	Describe governing of turbines with a neat sketch.	CO1	7 Marks
	b)	List various causes and effects of Cavitation.	CO1	7 Marks

CODE No.:16BT30103 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

MECHANICS OF SOLIDS

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Derive the expression for the extension of a bar due to its self-weight.	CO1	7 Marks
	b)	A 2m long bar has a uniform diameter of 35mm for a length 1m from one end for the next 0.6m length, the diameter decreases uniformly to d. For the remaining 0.6m length, it has an uniform diameter of 'd' mm. When a load of 120kN is applied, the observed extension is 2.1mm. Determine the diameter d. Take $E=2\times10^5 N/mm^2$.	CO3	7 Marks

(OR)

2	a)	Derive the relationship between Modulus of Elasticity and Modulus of rigidity.	CO1	7 Marks
	b)	A steel bar 60mm wide, 15mm thick and 350mm long is subjected to an axial pull of 90KN. Find the changes in the length, width, thickness and the volume if the bar. Take $E=2\times10^5$ N/mm² and $\mu= 0.32$.	CO5	7 Marks

UNIT-II

3		Determine the maximum shear force and bending moment for a simply supported beam carrying a concentrated load W placed eccentrically on the span. Draw SFD and BMD.	CO2	14 Marks

(OR)

4		A beam AB 1m long is simply supported at its ends A and B, it carries uniformly distributed load of 30kN/m for a distance of 4m from the left end A and a concentrated load of 50 kN and 30kN at a distance of 2m from either ends of the beam respectively. Determine the maximum shear force and bending moment. Draw SFD and BMD.	CO2	14 Marks

UNIT-III

5	a)	A 250 x 150mm rectangular beam is subjected to maximum bending moment of 750kNm. Determine: i) The maximum stress in the beam. ii) If E= 200GN/m², find out the radius of curvature for that portion of the beam where the bending is maximum. iii) The value of the longitudinal stress at a distance of 65mm from the top surface of the beam.	CO4	7 Marks
	b)	Determine the dimensions of joist of a timber of span 8m to carry a brick wall 200mm thick and 5m high. If the density of brick work is 1850kg/m³ and the maximum permissible stress is limited to 7.5 MN/m². Given that the depth of the joist is twice the width.	CO5	7 Marks

(OR)

6		A short column of hollow cylindrical section 25cm outside diameter and 15cm inside diameter carries a vertical load of 400kN along one of the diameter planes 10cm away from the axis of the column. Find the extreme intensities of stresses and draw stress distribution diagram.	CO2	14 Marks

UNIT-IV

7	a)	A solid shaft 120mm in diameter transmits 120 kW at 160 r.p.m. Find the maximum shear stress induced in the shaft. Find also the angle of twist in a length of 7.5 m. Take C = 8×10^4 N/mm².	CO3	7 Marks
	b)	Determine the diameter of the shaft which will transmit 90kW at 160m r.p.m if the shear strength in the shaft is limited to 65N/mm². Find also the length of the shaft, if the twist must not exceed 1° over the entire length. Take C = 8×10^4 N/mm².	CO1	7 Marks

(OR)

8	a)	A closely coiled helical spring is to carry a load of 500N. Its mean coil diameter is to be 10 times that of the wire diameter. Calculate these diameters if the maximum shear stress in the material of the spring is to be 80 MN/m².	CO1	7 Marks
	b)	Derive the shear stress and deflection of a close coiled helical spring subjected to axial twist.	CO5	7 Marks

UNIT-V

9	a)	A cylindrical water tank of height 25m, inside diameter 2.2m, having vertical axis is open at the top. The tank is made up of steel having yield stress of 210MN/m². Determine the thickness of shell used when the tank is full of water.	CO3	7 Marks
	b)	A cylindrical air drum is 2.25m in diameter with plates 1.2cm thick. The efficiencies of the longitudinal and circumferential joints are respectively 75 % and 40 %. If the tensile stress in the plating is to be limited to 120MN/m², find the maximum safe air pressure.	CO6	7 Marks

(OR)

10	a)	A pipe of 200mm internal diameter and 50mm thickness carries a fluid at a pressure of 10MN/m². Calculate the maximum and minimum intensities of circumferential stress across the section.	CO4	7 Marks
	b)	Calculate the thickness of metal necessary for a cylindrical shell of internal diameter 160mm to withstand an internal pressure of 25MN/m², if maximum permissible tensile stress is 125MN/m².	CO4	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

SURVEYING

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Distinguish between the whole circle bearing system and quadrantal bearing system and adjustments of a prismatic compass. CO2 6 Marks

b) The reduced bearings of the lines of a traverse are given below. Determine the whole circle bearings of lines. CO2 8 Marks

Line	Bearings
AB	N 60° 25' E
BC	S 85° 30' E
CD	S 25° 45' W
DE	S 64° 30' E
EF	N 82° 45' W
FA	N 28° 14' W

(OR)

2 a) Explain the field procedure to calculate the are with prismatic compass survey. CO1 6 Marks

b) The following are the observed bearings of the lines of a traverse ABCDEA with the compass in a place where local attraction was suspected. Determine the correct bearings of the lines. CO2 8 Marks

Line	FB	BB
AB	191° 45'	13° 0'
BC	39° 30'	222° 30'
CD	22° 15'	200° 30'
DE	242° 45'	62° 45'
EA	330° 15'	147° 45'

UNIT-II

3 a) What are "curvature and refraction corrections in leveling? Derive an expression for the combined effect. Why are the effects ignored in ordinary leveling? CO1 6 Marks

b) R.L.'s of the corners of 20m side squares have been worked out and tabulated below. Prepare a contour map with 5m interval starting from 515m upwards. CO3 8 Marks

513 518 527 535 543 550
522 519 526 537 547 548
532 533 528 530 537 537
538 543 533 521 531 530
546 542 532 516 522 523
544 535 527 513 510 513

(OR)

4 a) Explain the Longitudinal and cross sectional leveling. CO1 7 Marks

b) The following staff readings were observed successively with a dumpy level, the instrument having been moved after third, sixth and eighth readings. CO4 7 Marks
2.228, 1.606, 0.988, 2.090, 2.864, 1.262, 0.602, 1.982, 1.044, 2.684 m. Enter the above readings in a page of a level book and calculate the R.L. of points if the first reading was taken with a staff held on a bench mark of 432.384m. Also perform arithmetic check. Use height of instrument method.

UNIT-III

5 a) What are the various constants of a tacheometer? How are they determined? CO1 6 Marks

b) Two sets of tachometric readings were taken from an instrument station A, the reduced level of which was 100.06m to a staff station B. Instrument P - Multiplying constant 100, additive constant 0.06m, staff held vertical. Instrument Q - Multiplying constant 90, additive constant 0.06m, staff held normal to the line of sight. Determine the staff reading instrument Q. CO2 8 Marks

Instrument	At	To	Height of instrument, m	Vertical angle	Staff readings, m
P	A	B	1.50	260	0.755, 1.005, 1.255
Q	A	B	1.45	260	?

(OR)

6 a) What do you mean by an "anallactic lens"? What are the advantages and disadvantages of using it CO1 6 Marks

b) A tacheometer is set up at an intermediate point on a traverse leg AB and the following observations were made on a vertically held staff. The instrument is fitted with an anallatic lens and the multiplying constant is 100. Compute the length AB and reduced level of B if RL of A is 500.0m. CO2 8 Marks

Staff station	**Vertical angle**	**Staff readings, m**
A	50 421	1.756, 2.506, 3.256
B	30 361	0.855, 1.255, 1.655

UNIT-IV

7 The area with the contour lines at the site of reservoir angle along the face of the proposed dam are as follows CO3 14 Marks

Contour(m)	612	610	608	606	604	602	600
Area (sq.m)	2745	2725	1885	1800	1805	1795	1835

Determine the volume of water in cu.m. taking 600 as the bed level and the reservoir is full by Prismoidal rule. Prepare a contour map with the above data.

(OR)

8 The area with the contour lines at the site of reservoir and the face of the dam are as follows CO4 14 Marks

Contour (m)	350	352	354	356	358	360	362
Area (sq.m)	300	10500	76000	145000	270000	415000	470000

Taking 350 as bottom level of the reservoir and 362 as full reservoirs. Find the volume of water in the reservoir in cu.m using suitable method.

UNIT-V

9 a) What is Total Station? Illustrate its uses. CO5 7 Marks

b) As per the standards state the important precautionary measures and maintenance of Total Station instruments. CO6 7 Marks

(OR)

10 a) Describe briefly the advantages of electronic the odolite. CO5 7 Marks

b) Describe the method of setting out a Total Station at the required point in the field. CO5 7 Marks

CODE No.: 16BT30201 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

DC MACHINES

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Draw neat diagram of a 4-pole DC machine. Label all its parts and mention the material used and significance of each part.	CO1	8 Marks
	b)	A 4-pole DC generator has 1200 armature conductors and generates 250V on open circuit when running at a speed of 500 r.p.m. The diameter of the pole-shoe circle is 0.35m and the ratio of pole arc to pole pitch is 0.7 while the length of the shoe is 0.2m. Find the mean flux density in the air gap. Assume lap-connected armature winding.	CO4	6 Marks
		(OR)		
2	a)	Derive the emf equation from fundamentals and explain why lap winding is preferred for low voltage and high current applications.	CO2	7 Marks
	b)	An 8-pole DC generator has 600 armature conductors and a useful flux of 0.05Wb. Estimate the emf generated, if it is lap-connected and runs at 1250 r.p.m. Compute the speed at which it is to be driven to produce the same emf, if it is wave-wound.	CO4	7 Marks

UNIT-II

3	a)	Define armature reaction. Show that the effect of armature mmf on main field is entirely cross-magnetizing.	CO1	6 Marks
	b)	Describe the role played by emf commutation in securing good commutation in DC machine.	CO1	8 Marks
		(OR)		
4	a)	Derive the equation for demagnetizing AT per pole.	CO2	6 Marks
	b)	An 8-pole generator has an output of 200A at 500V, the lap-connected armature has 1280 conductors, 160 commutator segments. If the brushes are advanced 4-segments from the no-load neutral axis, estimate the armature demagnetizing and cross-magnetizing ampere-turns per pole.	CO4	8 Marks

UNIT-III

5	a)	List out the possible reasons for the failure of building up of voltage by a DC generator when run at rated speed.	CO1	6 Marks
	b)	A separately excited generator supplies 80A at 240V when running at 1200 r.p.m. Suddenly, the speed drops to 1000 r.p.m and there is a 5% decrease in field flux. Find the load current under new condition. Assume that Ra = 0.1Ω. Calculate the terminal voltage.	CO4	8 Marks
		(OR)		
6	a)	Define critical resistance and critical speed of DC generator.	CO1	4 Marks
	b)	A separately excited generator when running at 1000 r.p.m supplied 200A at 125V. Compute the load current when the speed drops to 800 r.p.m, if load is unchanged. Given that armature resistance is 0.04Ω and total brush drop is 2V.	CO4	6 Marks
	c)	DC Shunt generator is suitable for power supply purposes. Justify.	CO5	4 Marks

UNIT-IV

7	a)	Explain the principle of operation of a DC motor. Derive the equation for the torque developed by a DC motor.	CO2	8 Marks
	b)	Select and describe the suitable speed control method for DC shunt motor which is used to control the speed in both the directions smoothly.	CO5	6 Marks

(OR)

8	a)	Define the term 'Back emf' with respect to a DC motor. Explain the role of back emf in smooth running of motor.	CO1	7 Marks
	b)	A 220V DC series motor is running at a speed of 800 r.p.m and draws 100A. The speed of the motor is 1147 r.p.m when developing half the torque. Total resistance of the armature is 0.05Ω. Assume that the magnetic circuit is unsaturated. Design the suitable value of field winding resistance of DC series motor in ohms.	CO3	7 Marks

UNIT-V

9		The Hopkinson's test on two similar machines gave the following full load results. Line current = 48A Line voltage = 200V Motor armature current = 230A The field currents are 3A and 3.5A. Armature resistance of each machine is 0.035Ω. Calculate the efficiency of each machine assuming a brush contact drop of 1 Volt per brush.	CO4	14 Marks

(OR)

10		List out direct and indirect methods of testing DC shunt machine and explain any one test in detail.	CO1	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

ELECTROMAGNETIC FIELDS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Using Gauss's law, obtain the expression for electric field intensity due to an infinite line charge.	CO4	7 Marks
	b)	Calculate the work done in moving a charge of 3 C in a uniform electric field $\overline{E} = 10\overline{a}_x + 12\overline{a}_y + 5\overline{a}_x V/m$ between the points i) (0, 0, 0) to (0, 0, 3). ii) (0, 1, 0) to (4, 0, 3).	CO3	7 Marks
		(OR)		
2	a)	Derive the expression for potential due to a i) Point charge. ii) Line charge. iii) Surface charge. iv) Volume charge.	CO1	7 Marks
	b)	Show that in an electric field the potential difference between two points '*a*' and '*b*' along the path is $V_a - V_b = \int_a^b \overline{E}.d\overline{L}$.	CO3	7 Marks

UNIT-II

3	a)	Discuss the boundary conditions at dielectric-dielectric and dielectric-conductor interface.	CO1	7 Marks
	b)	A homogeneous dielectric ($\varepsilon_r = 2.5$) fills region 1($x < 0$) while region 2($x>0$) in free space. i) If $D_1 = (12\overline{a}_x - 10\overline{a}_y + 4\overline{a}_z)nC/m^2$, find D_2 and θ_2. ii) If $E_2 = 12$ V/m and $\theta_2 = 60^0$, find E_1 and θ_2.	CO3	7 Marks
		(OR)		
4	a)	Derive the expression for capacitance of a composite parallel plate capacitor.	CO2	7 Marks
	b)	A parallel plate capacitor has a plate area of $1.5m^2$ and a plate separation of 5mm. There are two dielectrics in between the plates. The first dielectric has a thickness of 3mm with a relative permittivity of 6 and second has a thickness of 2mm with a relative permittivity of 4. Determine the capacitance.	CO3	7 Marks

UNIT-III

5		Using Ampere's circuital Law, obtain an expression for Magnetic field intensity due to: i) infinite sheet of current. ii) infinitely long coaxial transmission line.	CO4	14 Marks
		(OR)		
6	a)	Discuss the biological effects of man-made electromagnetic fields.	CO5	4 Marks
	b)	A toroidal coil of 500 turns is wound on a steel ring of 0.5m mean diameter and 2 x $10^{-3}m^2$ cross sectional area. An excitation of 4000A/m produces a flux density of 1 T. Determine the inductance of the coil and derive the expression used.	CO3	10 Marks

UNIT-IV

7	a)	Classify magnetic materials based on their relative permeability and explain in detail.	CO1	7 Marks
	b)	Plot the variation of magnetic field strength and magnetic flux density due to two conductors each of radius R meters and spaced d meters. One conductor carries a current +I amperes and the other -I amperes.	CO2	7 Marks

(OR)

8	a)	Derive an expression for force between two straight long parallel current carrying conductors. What will be the nature of force if the current is carrying in the same direction and opposite directions?	CO2	7 Marks
	b)	A magnetic field $\vec{B} = 3.5 \times 10^{-2} \vec{a}_z$ wb/m^2 exerts a force on a 0.3m long conductor along the x – axis. If the conductor current is $5A$ in the $-\vec{a}_z$ direction, what force must be applied to hold the conductor in position?	CO3	7 Marks

UNIT-V

9	a)	Show that in a capacitor the conduction current and displacement current are equal.	CO2	7 Marks
	b)	Write the Maxwell's equations in both point form and integral forms for free space and good conductor.	CO1	7 Marks

(OR)

10	a)	Differentiate between statically induced EMF and dynamically induced EMF and discuss their applications in electrical machines.	CO2	7 Marks
	b)	A capacitor has a capacitance of 1.5pF. Find the displacement current at t=0, if a voltage 5 sin 100(π*t) is applied to it.	CO3	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

SIGNALS, SYSTEMS AND NETWORKS

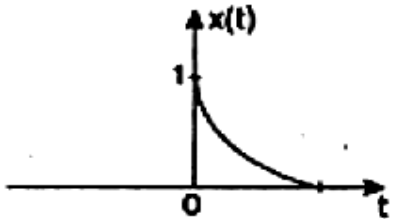
[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define stability of a system and verify whether the following system is stable or unstable $h(t) = 2e^{-3t}\cos t\, u(t)$.	CO2	7 Marks
	b)	Draw the odd and even components of the signal shown in the figure.	CO4	7 Marks



(OR)

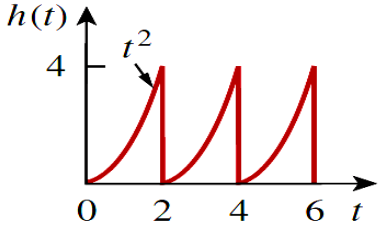
2	a)	State and prove the associative property of convolution sum.	CO1	6 Marks
	b)	Determine and sketch the convolved output of the system whose input $x(t)$ and impulse response $h(t)$ are as follows: $x(t) = e^{-3t}\{u(t) - u(t-2)\}$; $h(t) = e^{-t}u(t)$.	CO4	8 Marks

UNIT-II

3	a)	Enumerate the properties of the Laplace Transform.	CO1	6 Marks
	b)	A system has the transfer function $H(s) = \frac{s}{(s+1)(s+2)}$. Find the impulse response of the system.	CO4	8 Marks

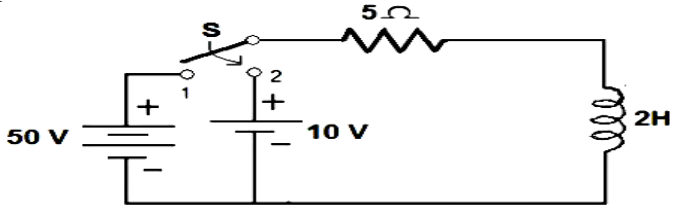
(OR)

4	a)	Compare the Fourier and Laplace Transforms applied for the signal transformation.	CO2	6 Marks
	b)	Transform the given periodic signal shown in Figure using Laplace transforms into frequency domain.	CO5	8 Marks



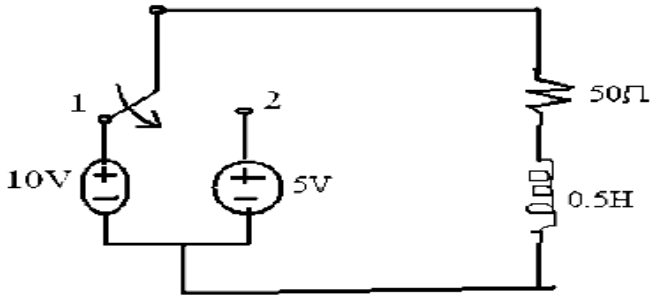
UNIT-III

5	a)	What is the significance of time constant of R-L circuit? What are the different ways of defining time constant?	CO1	6 Marks
	b)	In the circuit shown in Figure, switch S is in position 1 for a long time and brought to position 2 at time $t = 0$. Determine the circuit current.	CO4	8 Marks

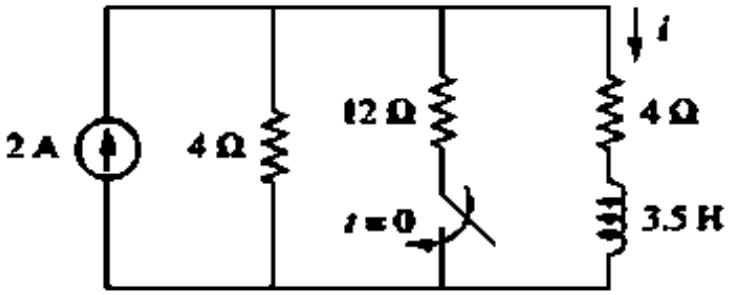


(OR)

6	a)	In the Figure switch is closed at position 1 at t = 0. At t = 0.5m Sec, the switch is moved to position 2. Find the expression for the current using differential equation method in both the conditions and sketch the transients.	CO4	7 Marks

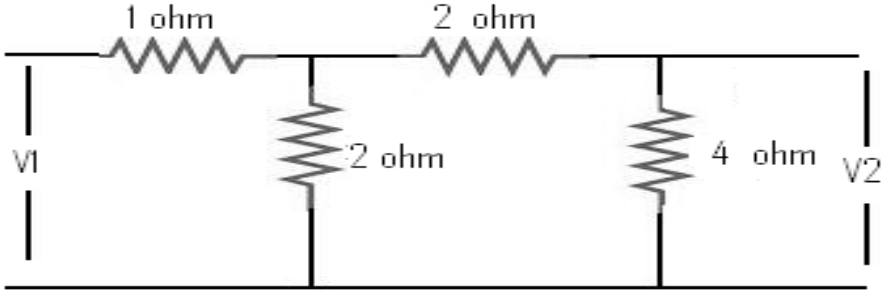


	b)	In the circuit shown in sigure, the switch is closed at t = 0. Use the Laplace method to determine the current through the inductor for all $t > 0$.	CO4	7 Marks



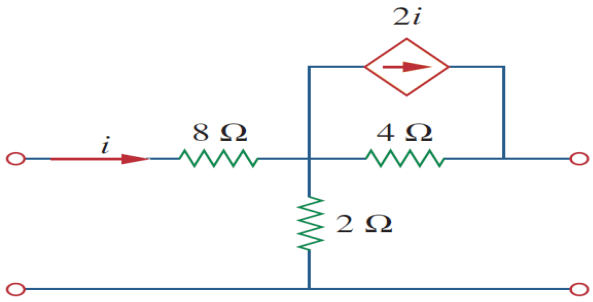
UNIT-IV

7	a)	Express ABCD parameters in terms of admittance parameters for a generalized network.	CO2	6 Marks
	b)	Two identical sections of the network is shown in below figure are connected in parallel. Obtain the admittance parameters of the combination.	CO4	8 Marks



(OR)

8	a)	Represent an amplifier as a T and π models, whose impedance parameters are given as Z_{11}=25Ω, Z_{12}=Z_{21}=20Ω, Z_{22}=50Ω.	CO6	6 Marks
	b)	Determine the y parameters for the two-port shown in figure. Investigate the netwok for symmetry and reciprocal.	CO4	8 Marks



UNIT-V

9	a)	Derive the expression for design impedance of a constant *k* filters.	CO2	6 Marks
	b)	The elements of a *T* section of a constant *k* low pass filter are inductance = 50mH each and capacitance = 0.01μF. Calculate the cut-off frequency and characteristic impedances at a frequency of 1kHz and 5kHz. Also find the attenuation and phase shift at 1kHz and 5kHz.	CO4	8 Marks

(OR)

10	a)	Derive the expressions for attenuation and phase shift in pass band and stop band for a symmetrical *T* section low pass filter.	CO2	6 Marks
	b)	Design an *m*-derived high pass filter having a design impedance of R_0 = 500Ω and cut-off frequency of 5kHz and $\boldsymbol{m}$ = 0.32. Also determine the frequency of infinite attenuation.	CO3	8 Marks

CODE No.: 16BT30241 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

ELECTRICAL TECHNOLOGY

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the different types of self-excited DC generators? Obtain the terminal voltage and current expressions for each of them.	CO2	8 Marks
	b)	Explain the various losses in DC machine.	CO1	6 Marks
		(OR)		
2	a)	Explain the load characteristics of Shunt, Series and Compound motors and thereby bring out their applications.	CO6	7 Marks
	b)	Explain various methods to control the speed of DC shunt motor.	CO5	7 Marks

UNIT-II

3	a)	A 125 kVA transformer has a primary voltage of 2000 V at 50Hz with 182 and 40 turns on primary and secondary respectively. i) Neglecting the losses calculate no load secondary e.m.f. ii) Full load primary and secondary currents. iii) Flux in the core..	CO4	7 Marks
	b)	Develop the equivalent circuit of a single phase transformer.	CO2	7 Marks
		(OR)		
4	a)	Draw the equivalent circuit of a transformer and show how the constants of primary and secondary windings may be combined to give a simplified equivalent circuit with the values of constants given in terms of secondary winding.	CO3	7 Marks
	b)	A 3300/240 V single phase transformer takes a no load current of 2A at a p.f. of 0.25 lagging. Determine the primary current and p.f., when the transformer supplying a load of 60A at a p.f. of 0.9 lagging.	CO4	7 Marks

UNIT-III

5	a)	A 3-phase balanced delta connected load of $(5+j8)\Omega$ per phase is connected 400 V. Calculate the i) Phase currents. ii) Line currents. iii) Total power consumed by the load.	CO4	7 Marks
	b)	Two wattmeter method is used to measure the power taken by a 3-phase induction motor on no-load. The wattmeter readings are 375W and -50W. Calculate power factor, phase angle difference of voltage and current in two wattmeters.	CO4	7 Marks
		(OR)		
6	a)	Explain the generation of three phase voltages.	CO1	4 Marks
	b)	A balanced star connected load of $(4+j3)\Omega$ per phase is connected to balanced three phase supply. The phase current is 12A. Find active power, reactive power and apparent power.	CO4	6 Marks
	c)	A balanced delta connected load of $(4+j8)\Omega$ per phase is connected 400V balanced three phase supply. Determine phase and line currents.	CO4	4 Marks

UNIT-IV

7	a)	Explain how a rotating magnetic field is produced in a three phase induction motor with the help of neat diagram.	CO1	10 Marks
	b)	A three phase, 6 pole, 50Hz induction motor develops 4kW including friction and windage losses at 950 r.p.m. If the stator loss is 250W, find the rotor frequency.	CO4	4 Marks

(OR)

8	a)	Derive the condition for maximum running torque of three phase induction motor.	CO2	7 Marks
	b)	A 4-pole, 3-phase induction motor operates from a supply whose frequency is 50Hz. Calculate i) The speed at which the magnetic field of the stator is rotating. ii) The speed of the rotor when the slip is 0.04. iii) The frequency of the rotor currents when the slip is 0.03. iv) The frequency of the rotor currents at standstill.	CO4	7 Marks

UNIT-V

9	a)	Draw and explain the constructional details of shaded-pole motor.	CO1	7 Marks
	b)	Explain the working principle of operation of universal motor and list out its applications.	CO1	7 Marks

(OR)

10	a)	List out the different types of stepper motors according to their construction.	CO1	7 Marks
	b)	Explain the differences between capacitor start, capacitor start-capacitor run and permanent split capacitor motors.	CO1	7 Marks

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CODE No.: 16BT30301 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-16) Supplementary Examinations June – 2019

ENGINEERING METALLURGY

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Compare Bessemer and open hearth process.	CO2	7 Marks
	b)	Explain the process of steel making in L-D process.	CO1	7 Marks
		(OR)		
2		Explain the working principle of blast furnace with a neat diagram.	CO4	14 Marks

UNIT-II

3		Explain the cooling curve for an ideal eutectoid system and its corresponding phase diagram.	CO4	14 Marks
		(OR)		
4		Draw a neat diagram of Fe-Fe_3c diagram and write different invariant reactions in it.	CO2	14 Marks

UNIT-III

5		What is the Purpose of Heat treatment? Explain any two heat treatment methods.	CO3	14 Marks
		(OR)		
6		Write about Annealing. Explain different types annealing process.	CO3	14 Marks

UNIT-IV

7	a)	Write the differences between Surface hardening and heat treatment.	CO3	7 Marks
	b)	Explain the following .	CO3	7 Marks
		i) Nitriding. ii) Flame hardening.		
		(OR)		
8	a)	Write about X-ray Diffraction.	CO5	7 Marks
	b)	Explain Scanning Electron Microscope.	CO5	7 Marks

UNIT-V

9	a)	Write the applications of powder metallurgy.	CO4	7 Marks
	b)	Explain the following:	CO4	7 Marks
		i) Blending. (ii) Sintering.		
		(OR)		
10		Mention the steps in powder metallurgy and explain each step.	CO6	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

KINEMATICS OF MACHINERY

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Sketch and explain slotted lever quick return mechanism.	CO1	8 Marks
	b)	Classify and explain various kinematic pairs.	CO1	6 Marks

(OR)

2	a)	Explain different types of constrained motions with the help of neat sketches.	CO1	7 Marks
	b)	Explain one inversion of double slider crank chain.	CO1	7 Marks

UNIT-II

3		A link AB of a four bar ABCD revolves uniformly at 120 r.p.m in a clock wise direction. Find the angular acceleration of the links BC and CD and acceleration of point E on link BC. Take AB = 75mm; BC = 175mm; EC = 50mm; CD = 150mm; DA = 100mm and angle BAD = 90^0.	CO2	14 Marks

(OR)

4		The crank (OB) length of an engine mechanism is 50mm and length of connecting rod AB = 225mm. The centre of gravity (G) of connecting rod is 75mm from B. The crank shaft has a speed of 75 rad/ sec and angular acceleration of 1200 rad/sec^2. For the position in which OB turned 45^0 from OA, find: i) the velocity of G and angular velocity of AB. ii) the acceleration of G and angular acceleration of AB.	CO2	14 Marks

UNIT-III

5		Sketch and explain the working of T-chebicheff straight line motion mechanism.	CO1	14 Marks

(OR)

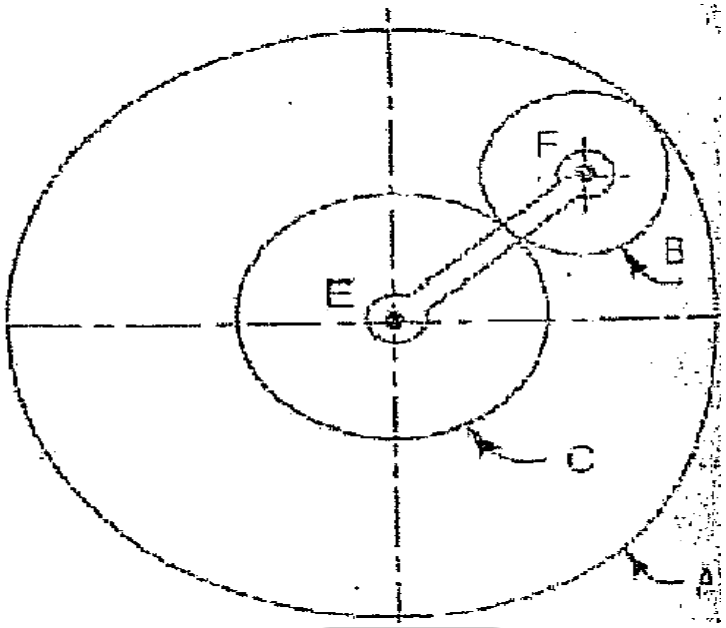
6	a)	In a Davis steering gear, the distance between the pivots of the front axle is 1m and the wheel base is 2.5m. Find the inclination the track arm to the longitudinal axis of the car, when it is moving along a straight line.	CO1	7 Marks
	b)	Two shafts are connected by a Hooke's joint. The driving shafts revolve uniformly at 500 r.p.m. If the total permissible variation on speed of the driven shaft is not exceeded ± 6% of the speed, find the greatest permissible angle between the centre lines of the shafts. Also determine the maximum and minimum speeds of the driven shaft.	CO2	7 Marks

UNIT-IV

7		A pair of gears, having 40 and 30 teeth respectively is of 25^0 involute forms. The addendum length is 5mm and module pitch is 2.5 mm. If the smaller wheel is the driver and rotates at 1500 r.p.m, find the velocity of sliding at the point of engagement and at the point of disengagement.	CO3	14 Marks

(OR)

8 An epi-cyclic gear train consists of three gears A, B and C as shown in figure. The gear A has 72 internal teeth and gear C has 32 external teeth. The gear B meshes with both A and C and is carried on an arm EF which rotates about the centre of A at 18 r.p.m. If gear A is fixed, determine the speed of gears B and C. CO4 14 Marks



UNIT-V

9 A cam rotating at uniform speed of 300 r.p.m operates a reciprocating follower through a roller of 15mm diameter. Minimum radius of cam is 30mm. The follower is to have an outward stroke of 30mm with uniform acceleration and retardation motion during 120^0 of cam rotation, the follower is to dwell for 30^0 and is to return to its initial position with SHM during 90^0 of cam rotation. The follower is to dwell for the remaining portion. The follower axis passes through the cam centre. Draw the cam profile. CO5 14 Marks

(OR)

10 It is required to set out the profile of a cam to give the following motion to the reciprocating follower with a knife edge: CO6 14 Marks

i) Follower to have a lift of 20mm during 120^0 of cam rotation.
ii) Follower to dwell for 50^0 of cam rotation.
iii) Follower to return to its initial position during 90^0 of cam rotation.
iv) Follower to dwell for remaining period of cam rotation.

The minimum radius of cam is 25mm. The outer stroke of the follower is performed with SHM and return stroke with equal uniform acceleration and retardation.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

MANUFACTURING TECHNOLOGY

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I		
1	a)	Briefly describe various steps involved in making a casting.	CO1	7 Marks
	b)	Explain skeleton pattern briefly with a neat sketch.	CO2	7 Marks
		(OR)		
2	a)	Explain the design considerations are needed to be followed in Gating system.	CO3	7 Marks
	b)	Name the pattern allowances which can be quantitatively specified. Write brief note on each of them.	CO2	7 Marks
		UNIT-II		
3	a)	Explain with neat sketches the step-by-step procedure of Investment casting.	CO3	7 Marks
	b)	Write short notes on cleaning and finishing of castings.	CO3	7 Marks
		(OR)		
4	a)	List out various casting defects with neat sketches and explain the causes and remedies of them.	CO4	7 Marks
	b)	Explain the merits, demerits and applications of permanent mould casting with a neat sketch.	CO5	7 Marks
		UNIT-III		
5	a)	Distinguish between wire drawing and tube drawing with sketches.	CO5	7 Marks
	b)	Write the different types of extrusion process and mention any two processes.	CO5	7 Marks
		(OR)		
6	a)	Explain various types of dies used in sheet metal operations.	CO4	7 Marks
	b)	Explain the magnetic pulse forming with a neat sketch.	CO4	7 Marks
		UNIT-IV		
7	a)	Differentiate arc welding and submerged arc welding.	CO1	7 Marks
	b)	Sketch and explain the construction and working of Electron beam welding with its advantages and limitations.	CO1	7 Marks
		(OR)		
8	a)	Write any two resistance welding process with their merits, demerits and applications.	CO4	7 Marks
	b)	List and explain the non-destructive tests applied in welding.	CO4	7 Marks
		UNIT-V		
9	a)	Describe the working principle of blow molding process.	CO5	7 Marks
	b)	List and explain the important mechanical and physical properties of plastics.	CO1	7 Marks
		(OR)		
10	a)	Compare and contrast between direct extrusion and indirect extrusion.	CO4	7 Marks
	b)	Explain the transfer moulding process by its merits and demerits with a neat sketch.	CO5	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

STRENGTH OF MATERIALS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define the term factor of safety and its importance.	CO1	4 Marks
	b)	An axial pull of 40kN is applied on a steel bar of diameter 12mm and length 2.5m. Calculate the change in length, diameter and volume of the bar if the Poisson's ratio is 0.25. Also find the work done in stretching the bar. Take E = 2 x 10^5 N/mm^2.	CO2	10 Marks

(OR)

2		A rigid block of mass M is supported by three symmetrically spaced rods as shown in Fig 1. Each copper rod has an area of 900mm^2; length of 160mm; E = 120GPa; and the allowable stress is 70MPa. The steel rod has an area of 1200mm^2; length of 240mm; E = 200GPa; and the allowable stress is 140MPa. Determine the largest mass M which can be supported.	CO5	14 Marks

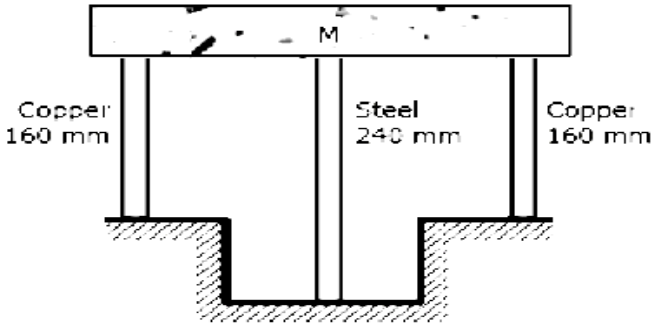

Fig. 1

UNIT-II

3		Draw the shear force and bending moment diagram for the beam shown in Fig 2. Locate the points of contraflexure, if any. Also find the point of maximum bending moment.	CO6	14 Marks

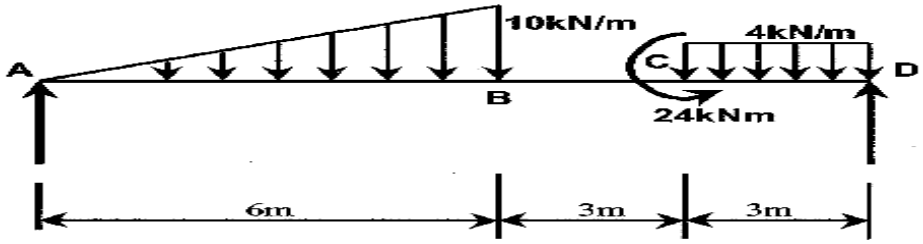

Fig.2

(OR)

4	a)	Is the point of contraflexure and point of inflexion same? Justify.	CO1	4 Marks
	b)	A beam ABC of 10 meters length is simply supported at A and B and has overhanging portion BC such that AB = 8m and BC = 2m. The beam carries uniformly distributed load of 2kN/m over a length of 4m from A, two concentrated loads of 4kN and 2kN at a distance of 6m from A and at the free end C respectively. Draw bending moment and shear force diagrams for the beam mentioning all the salient points. Also locate its point of contraflexure.	CO6	10 Marks

UNIT-III

5		A solid shaft of mild steel 200mm in diameter is to be replaced by hollow shaft of alloy steel for which the allowable shear stress is 22% greater. If the power to be transmitted is to be increased by 20% and the speed of rotation increased by 6%, determine the maximum internal diameter of the hollow shaft. The external diameter of the hollow shaft is to be 200mm.	CO3	14 Marks

(OR)

6		State the assumptions in the theory of simple bending. Also derive the bending equation from first principles.	CO1	14 Marks

UNIT-IV

7		Derive the relations for slope and deflection at free end of a cantilever beam of span 'L' subjected to the following loads. i) When a concentrated load 'W' acts at free end. ii) When a UDL of intensity w per unit run act over entire span.	CO1	14 Marks

(OR)

8		A cantilever of 3m length and of uniform rectangular cross-section 150mm wide and 300mm deep is loaded with a 30kN load at its free end. In addition to this, it carries a uniformly distributed load of 20kN/m run over its entire length. Calculate: i) Maximum slope and maximum deflection. ii) Slope and deflection at 2m from fixed end. Take E = 210GN/m^2.	CO4	14 Marks

UNIT-V

9		A cylindrical shell is subjected to internal fluid pressure; find an expression for change in diameter, change in length and change in volume of the cylinder.	CO4	14 Marks

(OR)

10	a)	Distinguish thin cylinders from thick cylinders. Mention the assumptions involved in the analysis of thin cylinders.	CO1	5 Marks
	b)	Calculate the thickness of metal necessary for a cylindrical shell of internal diameter 160mm to withstand an internal pressure of 25MN/m^2, if maximum permissible tensile stress is 125MN/m^2.	CO5	9 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

THERMODYNAMICS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What do understand by macroscopic and microscopic view points?	CO1	6 Marks
	b)	Define the following terms: i) Thermodynamic equilibrium. ii) Reversible process and irreversible process. iii) Homogeneous and heterogeneous system.	CO1	8 Marks
		(OR)		
2	a)	Classify systems and explain with neat sketch quasi static process.	CO1	6 Marks
	b)	A mass of 1.5kg of air is compressed in a quasi-static process from 0.1MPa to 0.7MPa for which pv = constant. The initial density of air is 1.16kg/m^3. Find the work done by the piston to compress the air.	CO2	8 Marks

UNIT-II

3	a)	Define Clausius and Kelvin Planck Statement.	CO1	4 Marks
	b)	A heat pump working on the Carnot cycle takes in heat from a reservoir at 5°C and delivers heat to a reservoir at 60°C. The heat pump is driven by a reversible heat engine which takes in heat from a reservoir at 840°C and rejects heat to a reservoir at 60°C. The reversible heat engine also drives a machine that absorbs 30 kW. If the heat pump extracts 17kJ/s from the 5°C reservoir, determine i) The rate of heat supply from the 840°C source. ii) The rate of heat rejection to the 60°C sink.	CO2	10 Marks
		(OR)		
4	a)	Show that the internal energy of an ideal gas and an incompressible substance is a function of temperature only, $u = f(T)$.	CO1	4 Marks
	b)	Two reversible heat engines A and B are arranged in series, A rejecting heat directly to B. Engine A receives 200kJ at a temperature of 421°C from a hot source, while engine B is in communication with a cold sink at a temperature of 4.4°C. If the work output of A is twice that of B, find i) The intermediate temperature between A and B. ii) The efficiency of each engine. iii) The heat rejected to the cold sink.	CO2	10 Marks

UNIT-III

5	a)	Explain Available energy for thermodynamic cycle.	CO1	4 Marks
	b)	Air enters an adiabatic compressor at atmospheric conditions of 1 bar, 15°C and leaves at 5.5 bar. The mass flow rate is 0.01kg/s and the efficiency of the compressor is 75%. After leaving the compressor, the air is cooled to 40°C in an after-cooler. Calculate i) The power required to drive the compressor. ii) The rate of irreversibility for the overall process. (compressor and cooler).	CO3	10 Marks
		(OR)		

6	a)	Explain the decrease in available energy due to heat transfer through a finite temperature difference.	CO4	4 Marks
	b)	0.2 kg of air at 300°C is heated reversibly at constant pressure to 2066K. Find the available and unavailable energies of the heat added. Take $T0$ = 30°C and cp = 1.0047 kJ/kg K.	CO4	10 Marks

UNIT-IV

7	a)	Explain Perfect gas behavior and equations of state.	CO1	4 Marks
	b)	Two insulated tanks, A and B, are connected by a valve. Tank A has a volume of 0.70m³ and contains steam at 1.5 bar, 200°C. Tank B has a volume of 0.35m³ and contains steam at 6 bar with a quality of 90%. The valve is then opened, and the two tanks come to a uniform state. If there is no heat transfer during the process, what is the final pressure? Compute the entropy change of the universe.	CO4	10 Marks

(OR)

8	a)	State Daltons law of partial pressure.	CO1	4 Marks
	b)	Two streams of steam, one at 2MPa, 300°C and the other at 2MPa, 400°C, mix in a steady flow adiabatic process. The rates of flow of the two streams are 3kg/min and 2kg/min respectively. Evaluate the final temperature of the emerging stream, if there is no pressure drop due to the mixing process. What would be the rate of increase in the entropy of the universe? This stream with a negligible velocity now expands adiabatically in a nozzle to a pressure of 1kPa. Determine the exit velocity of the stream and the exit area of the nozzle.	CO4	10 Marks

UNIT-V

9	a)	Show that for the maximum pressure and Temperature of the cycle and the same heat rejection rate $\eta_{diesel} > \eta_{dual} > \eta_{Otto}$ With the help of P-V and T-S diagrams.	CO4	4 Marks
	b)	An air standard limited pressure cycle has a compression ratio of 15 and compression begins at 0.1MPa, 40^0C. The maximum pressure is limited to 6MPa and the heat added is 1.67MJ/Kg. Compute the heat supplied at constant volume per kg of air and final work done per kg of air.	CO5	10 Marks

(OR)

10	a)	Discuss the effect of compression ratio and specific heat ratio on the efficiency of Otto cycle.	CO4	4 Marks
	b)	An engine of 250mm bore and 375mm stroke works on Otto cycle. The clearance volume is 0.00263m³. The initial pressure and temperature are 1 bar and 50°C. If the maximum pressure is limited to 25 bar, find the following : i) The air standard efficiency of the cycle. ii) The mean effective pressure for the cycle. Assume the ideal conditions.	CO5	10 Marks

CODE No.: 16BT30401 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

ELECTRONIC CIRCUIT ANALYSIS AND DESIGN

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Compare Direct and Capacitive coupling of multiple stages of amplifiers.	CO2	7 Marks
	b)	Explain different methods used for coupling multistage amplifiers with their Frequency response.	CO1	7 Marks
		(OR)		
2	a)	What is an amplifier? Discuss about CE amplifier with neat diagram	CO1	7 Marks
	b)	List out various types of distortions that occur in transistor amplifiers. Discuss the causes for each type listed.	CO2	7 Marks

UNIT-II

3	a)	Discuss the frequency response of BJT amplifier at low, mid and high frequencies. Give its significance in each region.	CO3	7 Marks
	b)	Explain the effect of bypass capacitor in an Amplifier.	CO1	7 Marks
		(OR)		
4	a)	Define f_{β}, f_T and $f\alpha$ and state the relation between f_{β} and f_T	CO1	7 Marks
	b)	Derive an expression for the overall higher cut-off frequency of a two stage amplifier with identical stages of individual higher cut-off frequency, f_H.	CO3	7 Marks

UNIT-III

5	a)	Compare RC and LC oscillators.	CO2	7 Marks
	b)	Calculate the gain, input impedance and output impedance of voltage series feedback amplifier having gain A = -300, R_{in} = 1.5kΩ and R_{out} = 50kΩ, β= 0.05.	CO4	7 Marks
		(OR)		
6	a)	Write short notes on frequency stability.	CO1	6 Marks
	b)	A Hartley oscillator is designed with L_1= 20 μH; L_2= 2 mH. Determine range of capacitances, if frequency is varied between 950kHz and 2050kHz.	CO4	8 Marks

UNIT-IV

7	a)	What are the advantages and disadvantages of a transformer coupled Class-A power amplifier?	CO1	7 Marks
	b)	Which methodology can apply to eliminate cross over distortion in class-B push pull power amplifier?	CO6	7 Marks
		(OR)		
8	a)	What is cross over distortion? How can it be eliminated in case of a transformer coupled class- B push pull power amplifier? Explain with a neat circuit diagram.	CO1	7 Marks
	b)	What is heat sink? How can you apply heat sink concept to the power amplifiers.	CO6	7 Marks

UNIT-V

9	a)	Define a tuned amplifier and list its Applications.	CO1	6 Marks
	b)	Select a single tuned amplifier and explain its operation.	CO5	8 Marks

(OR)

10	a)	Why stability is required in case of tuned amplifiers? What are various stabilization techniques? Explain any one in detail with neat circuit diagram.	CO1	7 Marks
	b)	Select a tuned amplifier to operate in the radio frequency and explain its operation.	CO5	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

SIGNALS AND SYSTEMS

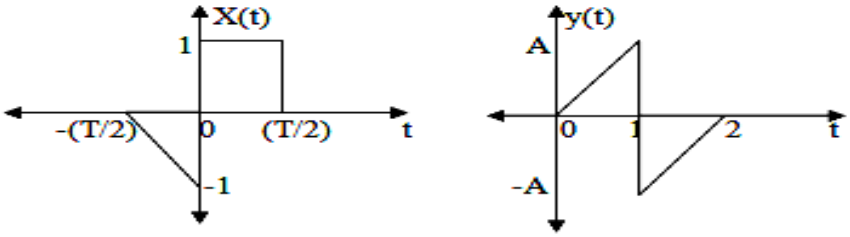
[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Represent the following signals in terms of step and ramp functions.	CO2	8 Marks



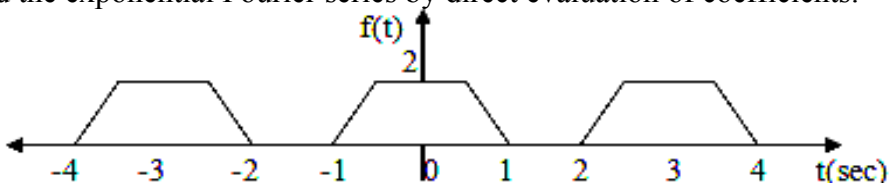
	b)	Derive the conditions for causality and stability of LTI systems.	CO1	6 Marks

(OR)

2	a)	Define the following elementary signals. i) Real Exponential signal. ii) Continuous time version of a sinusoidal signal.	CO1	7 Marks
	b)	List out the properties of an LTI system.	CO2	7 Marks

UNIT-II

3		Find the exponential Fourier series by direct evaluation of coefficients.	CO4	14 Marks

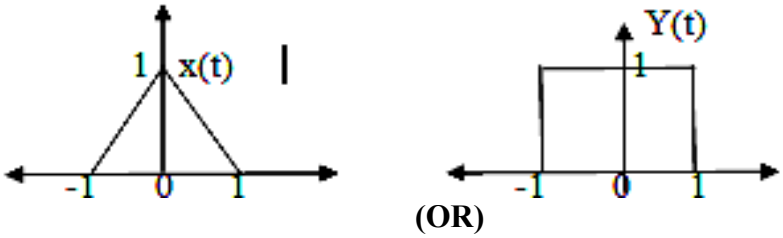


(OR)

4	a)	Obtain the fourier transform of; i) Sgn(t). ii) $\Delta(t) = \begin{cases} 1 - \frac{2\|t\|}{\tau} & for \mid t \mid < \tau \\ 0 & elsewhere \end{cases}$.	CO4	7 Marks
	b)	State and prove the: (i) Modulation theorem of Fourier transform. (ii) Duality property of Fourier transform.	CO1	7 Marks

UNIT-III

5	a)	Prove that for a signal, auto correlation and PSD form a Fourier transform pair	CO2	7 Marks
	b)	Find the cross correlation between unit triangular and unit gate pulse as follows:	CO4	7 Marks



(OR)

6	a)	Determine auto and cross correlation, ESD of the signal x(t)=A sin(wt+∅)	CO4	7 Marks
	b)	Find auto correlation, power, RMS value and sketch the PSD for the signal x(t)=(A+sin100t)cos200t.	CO4	7 Marks

UNIT-IV

7	a)	Derive the relation between Laplace transform and Z-transfrom.	CO2	7 Marks
	b)	Determine $x(t)$ and ROC for the function $X(s) = \frac{(s+1)(s+2)}{s^2 - s - 1} \text{Re}\{s\} \geq 1/2$.	CO4	7 Marks

(OR)

8	a)	Write the properties of region of convergence for Laplace transform.	CO1	7 Marks
	b)	State and prove initial and final value of laplace transform and explain its significance in analyzing a system	CO2	7 Marks

UNIT-V

9	a)	Bring out the differences between Fourier, Laplace and Z-transform.	CO2	7 Marks
	b)	Prove that for causal sequences ROC is in exterior of circle of some radius r.	CO1	7 Marks

(OR)

10	a)	Using partial fractions expansion, Find the Inverse Z-Transform of the system $X(Z) = \frac{1 - 1/3z^{-1}}{(1 - Z^{-1})(1 + 2Z^{-1})} \mid Z \mid > 2$.	CO3	7 Marks
	b)	A finite sequence $x[n]$ is defined as $x[n] = \{5,3, -2, 0, 4, -3\}$. Find $X[Z]$ and its ROC.	CO4	7 Marks

CODE No.: 16BT30403 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

SWITCHING THEORY AND LOGIC DESIGN

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I		
1	a)	Minimize the following function f = ABC'+A'B'C+ABC+A'B'C and realize using NAND only	CO3	7 Marks
	b)	Express the duals of the following functions: i) A′B′C′+A′BC′+AB′C′+ABC′ ii) X′Y′Z′+X′YZ′+XY′Z′+XY′Z+XYZ′.	CO4	7 Marks
		(OR)		
2	a)	Realize X-OR operation using only NAND gates.	CO3	7 Marks
	b)	Express the complements of the following expressions. i) B′C′D+(B+C+D) ′+B′C′D′E. ii) (ABC)′(A+B+C)′.	CO4	7 Marks
		UNIT-II		
3	a)	Implement the following function with either NAND or NOR gates. *F*=ABC'+AB'C+ABC	CO5	7 Marks
	b)	Minimize the following Boolean expressions using Karnaugh map method. F(A,B,C,D)=ΠIm(2, 3, 4, 7, 8, 9, 11, 12).	CO4	7 Marks
		(OR)		
4	a)	Implement the following function with either NAND or NOR gates. F=w'x'z+wxz+x'y'z=wxyz'.	CO5	7 Marks
	b)	Minimize the following Boolean expressions using Karnaugh map method. F(W,X,Y,Z)=Σm(1,3,4,5,6,11,12,13,15).	CO4	7 Marks
		UNIT-III		
5	a)	Explain with the suitable example, how a multiplexer is used to implement the Boolean function.	CO1	7 Marks
	b)	Implement the following Boolean function using 4:1. Mux: F(A,B,C,D)=∑m(0,1,3,4,8,9,14).	CO2	7 Marks
		(OR)		
6	a)	Mention applications of multiplexer.	CO1	4 Marks
	b)	Realize F(w,x,y,z)=∑m(1,4,6,7,8,10,11,15) using 8 to1 Mux.	CO2	10 Marks
		UNIT-IV		
7	a)	Draw a 3 bit Johnson counter and explain.	CO2	7 Marks
	b)	Design a 3 bit synchronous UP/DOWN counter.	CO3	7 Marks
		(OR)		
8	a)	Design a 3bit synchronous counter which counts in the sequence 000, 001, 011, 010,100, 110, (repeat) 000, …using D flip flop.	CO3	7 Marks
	b)	Obtain the following sequence 0, 1, 3, 5, 0, 1, 3, 5..... Synchronous counter using T-Flip flop.	CO4	7 Marks

UNIT-V

9	a)	Write a programmable table to implement a BCD to Ex-3 code conversion using a PAL.	CO6	7 Marks
	b)	Derive the PLA programming table for the combinational circuit that squares a 3 bit number.	CO5	7 Marks
		(OR)		
10	a)	Write a programmable table to implement a BCD to Ex-3 code conversion using a PLA.	CO6	7 Marks
	b)	Explain Analysis procedure and Design procedure for Asynchronous sequential circuits.	CO1	7 Marks

CODE No.: 16BT30441 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

ANALOG ELECTRONIC CIRCUITS

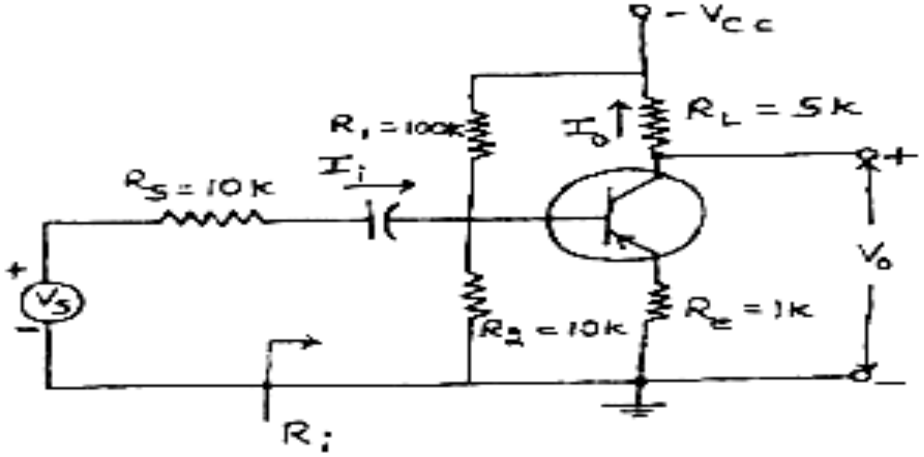
[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Compute A_i, A_v, A_{vs} and R_i. Assume h_{ie} = 1.1kΩ, h_{fe} = 50, $h_{re} = 2.5 \times 10^{-4}$, h_{oe} = 25 uA/V. For the transistor amplifier shown below.	CO4	8 Marks



	b)	Describe the working of a cascade amplifier with neat diagram.	CO1	6 Marks

OR)

2	a)	Obtain the expressions for the voltage gain in the low frequency, medium frequency and high frequency ranges in the case of single stage amplifier.	CO4	7 Marks
	b)	What is an amplifier? Discuss about CE amplifier with neat diagram.	CO1	7 Marks

UNIT-II

3	a)	Select a RC phase shift Oscillator to get low frequency sign wave and derive the expression for the frequency of oscillations.	CO5	8 Marks
	b)	Draw the circuit diagram of Hartley oscillator with BJT, explain its operation and derive an expression for frequency of oscillations.	CO3	6 Marks

(OR)

4	a)	Select a Trans-conductance amplifier and prove its input and output impedances are very large compared to CE amplifier.	CO5	6 Marks
	b)	Compare RC and LC oscillators.	CO2	8 Marks

UNIT-III

5	a)	Explain second harmonic distortion in power amplifiers.	CO1	7 Marks
	b)	Design a class B power amplifier to obtain the maximum conversion efficiency is 78.5%.	CO3	7 Marks

(OR)

6	a)	Compare push-pull and complementary class B power amplifier.	CO1	8 Marks
	b)	Select a power amplifier to get efficiency of 78.5%.explain it.	CO5	6 Marks

UNIT-IV

7	a)	Asses clamping operation by considering source and diode resistance into account.	CO2	7 Marks
	b)	Explain briefly why sinusoidal signals are not suitable for linear wave shaping.	CO1	7 Marks

(OR)

8	a)	Sketch the circuit diagram of a Positive Peak, Negative Peak Clamper Circuit.	CO2	7 Marks
	b)	Explain the operation of RC low pass circuit when it is excited by a ramp input with neat sketches.	CO1	7 Marks

UNIT-V

9	a)	Asses why a square wave is generated using Schmitt trigger. Explain its working.	CO6	7 Marks
	b)	Compare Astable and monostable multivibrator circuits.	CO2	7 Marks

(OR)

10	a)	Asses the reason to reduce the hysteresis loss from Schmitt trigger circuit.	CO6	8 Marks
	b)	Apply appropriate technique to convert voltage into Time using two transistors	CO5	6 Marks

CODE No.: 16BT30501 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations June – 2019

COMPUTER ORGANIZATION

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the hardware algorithm to perform addition and subtraction of two binary numbers which are represented in signed magnitude representation.	CO1	7 Marks
	b)	The 8-bit registers AR, BR, CR and DR initially have the following values: AR = 11110010 BR = 11111111 CR = 10111001 DR = 11101010 Determine the 8-bit values in each register after the execution of the following sequence of micro operations. AR←AR+BR Add BR to AR CR←CR ^ DR, BR←BR+1 AND DR to CR, increment BR AR←AR-CR Subtract CR from AR	CO5	7 Marks

(OR)

2	a)	Show the contents of registers E, A, Q and SC during the process of multiplication of two binary numbers 11111(multiplicand) and 10101 (multiplier). The signs are not included.	CO4	10 Marks
	b)	Explain the Floating-Point data representation in detail.	CO1	4 Marks

UNIT-II

3		Define the following: i) Micro Operation. ii) Control Word. iii) Control memory. iv) Micro Program. v) Micro Instruction.	CO1	14 Marks

(OR)

4	a)	Explain various types of instruction formats.	CO1	7 Marks
	b)	The memory unit of a computer has 256 words of 32 bits each. The computer has an instruction format with five fields an operation code field, A mode field to specify one of seven addressing modes, register address field to specify one of 64 processor registers and 2 memory address fields. Design an instruction format and the number of bits in each field if the instruction is in one memory word for the above said specifications.	CO3	7 Marks

UNIT-III

5	a)	Design parallel priority interrupt hardware for a system with eight interrupt sources.	CO3	7 Marks
	b)	Explain Asynchronous Serial Transfer technique.	CO1	7 Marks

(OR)

6	a)	Explain Daisy-chaining priority Interrupt.	CO1	7 Marks
	b)	How many characters per second can be transmitted over a 1200 baud-line in Synchronous Serial Transmission? (Assume a character code of 8 bits).	CO5	7 Marks

UNIT-IV

7	a)	A cache has 8 lines. Determine what should be the address of the cache line to transfer 12th block of main memory if the cache is using direct mapping management technique.	CO2, CO4	7 Marks
	b)	Discuss memory hierarchy in computer systems with respect to the factors speed, size and cost.	CO2	7 Marks

(OR)

8	a)	Explain with neat diagram structure of Synchronous DRAM. Also, explain how these chips are designed to meet requirements of commercially available processors.	CO1, CO6	7 Marks
	b)	Explain how Memory Interleaving technique can improve the price/performance ratio of the memory systems.	CO1, CO6	7 Marks

UNIT-V

9	a)	Compare Serial and Parallel Arbitration Procedures.	CO2	7 Marks
	b)	An un-pipelined processor has a cycle time of 25ns. What is the cycle time of a pipelined version of the processor with 5 evenly divided pipeline stages, if each pipeline latch has a latency of 1ns?	CO2	7 Marks

(OR)

10	a)	Compare the following Interconnection Structures to connect the Memory and Processors. i) Multiport Memory. ii) Crossbar Switch.	CO2	7 Marks
	b)	Consider a computer with 4 floating-point pipeline processors. Suppose that each processor uses a cycle time of 4ns. How long will it take to perform 400 floating-point operations? Is there a difference if the same 400 operations are carried out using a single pipeline processor with a cycle time of 10ns?	CO4	7 Marks

CODE No.: 16BT30502 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

DATA STRUCTURES

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I		
1	a)	Write a C program to delete a node which is minimum in the list.	CO5	7 Marks
	b)	Write a C function to search a particular data in a singly linked list.	CO5	7 Marks
		(OR)		
2		Explain the following circular linked list operations with neat diagrams. i) Creation. ii) Insertion at various positions. iii) Traverse.	CO1	14 Marks
		UNIT-II		
3		Let P be a pointer to a singly linked list. Show how this list may be used as a stack. That is, write algorithms to push and pop elements. Specify the value of P when the stack is empty.	CO3	14 Marks
		(OR)		
4	a)	Convert the following infix expression to post fix notation ((a+2)*(b+4)) -1.	CO3	9 Marks
	b)	Discuss about the exceptional conditions of Queue.	CO4	5 Marks
		UNIT-III		
5	a)	Define AVL tree and its properties.	CO1	7 Marks
	b)	Write a C program to insert a node into AVL tree.	CO5	7 Marks
		(OR)		
6	a)	Construct binary tree and identify preorder from given inorder and postorder traversals. Inorder: D B E A F C Postorder: D E B F C A	CO3	9 Marks
	b)	Construct a BST for the following sequence of numbers. 45, 36, 76, 23, 89, 115, 98, 39, 41, 56, 69, 48.	CO3	5 Marks
		UNIT-IV		
7		Define the following with example. i) Adjacency matrix. ii) Adjacency list. iii) Sparse Matrix. iv) Reachability matrix.	CO1	14 Marks
		(OR)		
8		Draw the complete undirected graphs on one, two, three, four and five Vertices of telephone network. Prove that the number of edges in an n vertex complete graph isn(n-1)/2.	CO6	14 Marks
		UNIT-V		
9		Compare and contrast array, linked list and hash table data structures.	CO2	14 Marks
		(OR)		
10	a)	Define external storage. List and explain various types of storage devices.	CO1	8 Marks
	b)	Illustrate shell sort algorithm with an example.	CO1	6 Marks

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CODE No.: 16BT30503 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

PYTHON PROGRAMMING

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		List Operators in python, explain with examples.	CO1	14 Marks
		(OR)		
2	a)	Compare and Contrast syntax errors with semantic errors.	CO2	7 Marks
	b)	Define variable, explain different variable initializations.	CO1	7 Marks

UNIT-II

3		Write a python script to print fallowing pattern. 2 3 4 5 1 3 4 5 1 2 4 5 1 2 3 4	CO2	14 Marks
		(OR)		
4	a)	Describe the membership operators with an example.	CO1	7 Marks
	b)	Outline operator precedence and Boolean expressions.	CO2	7 Marks

UNIT-III

5	a)	Implement a Python code that determines how many times a given letter occurs in a given string using Recursion.	CO4	7 Marks
	b)	List out various String Methods used in Python.	CO1	7 Marks
		(OR)		
6		Define an Exception and explain the Exception handling mechanisms supported by Pyhton.	CO1	14 Marks

UNIT-IV

7		Explain types of Inheritance in python with an example program.	CO4	14 Marks
		(OR)		
8	a)	Write a brief note on sub-classes in python.	CO1	7 Marks
	b)	Explain the use of polymorphism with an example.	CO1	7 Marks

UNIT-V

9	a)	Write a brief note on structure of tkinter package.	CO1	7 Marks
	b)	List and explain the uses of Lambda.	CO2	7 Marks
		(OR)		
10	a)	Construct a window with bar of check buttons using tkinter.	CO4	7 Marks
	b)	Compare and contrast between radio buttons with check boxes in GUI programming of python.	CO2	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

ELECTRCAL AND ELECTRONICS MEASUREMENTS

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Analyse the performance and compare Dual Slope DVM with Successive approximation type DVM.	CO2	7 Marks
	b)	Compare moving coil instruments with moving iron instruments.	CO1	7 Marks
		(OR)		
2	a)	Design a circuit for measurement of voltage using galvanometer and derive its equation for series resistance.	CO3	7 Marks
	b)	List the operating forces and discuss in detail.	CO1	7 Marks

UNIT-II

3		Write a short notes on: i) Cromptons potentiometer. ii) Electrodynamometer wattmeter.	CO1	14 Marks
		(OR)		
4	a)	Explain how DC crompton potentiometer is used for measurement of i) Voltage. ii) Current.	CO1	7 Marks
	b)	Select and brief an appropriate technique for measurement of Low resistance range of 2Ω.	CO5	7 Marks

UNIT-III

5	a)	Design a bridge used for measurement of medium resistance and derive the balance equation.	CO3	7 Marks
	b)	Design a bridge used for measurement of Inductance between 0 to 100H and derive the balance equation.	CO3	7 Marks
		(OR)		
6	a)	Analyse the balance condition with necessary equation of Maxwell's inductance bridge.	CO2	7 Marks
	b)	In an Anderson bridge for measurement of inductance L_x and resistance R_x in the arm AB, the arm CD and DA have resistances of 600Ω each and the arm CE has a capacitor of 1micro farad with AC supply at 100Hz supplied across A and C, balance is obtained with a resistance of 400Ω in a arm DE and 800Ω in arm DC. Calculate the value of L_x and R_x.	CO4	7 Marks

UNIT-IV

7	a)	Develop a model using frequency synthesizer for the measurement of high frequency.	CO6	7 Marks
	b)	Analyse various errors associated with frequency counter.	CO2	7 Marks
		(OR)		
8	a)	With a neat block diagram, explain the operation of frequency synthesizer.	CO1	7 Marks
	b)	Describe the function of time base selector and explain its operation.	CO1	7 Marks

UNIT-V

9	a)	List out the differences between magnetic tape recorders and CD/DVD recorders.	CO3	7 Marks
	b)	Sketch the block diagram of digital storage oscilloscope and explain each block in detail.	CO1	7 Marks
		(OR)		
10	a)	Discuss total harmonic distortion analyzer with a neat sketch in detail.	CO1	7 Marks
	b)	Select and brief about an appropriate technique used for measurement of frequency range of 1khz.	CO5	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

SENSORS AND TRANSDUCERS

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Explain the following errors by giving suitable examples. Discuss the mean adopted to minimize these errors. i) Gross Errors. ii) Systematic Errors. iii) Random Errors.	CO1	14 Marks
		(OR)		
2		Define the following for Gaussian distribution of data. i) Precision Index. ii) Probable Error. iii) Standard deviation of mean. iv) Standard deviation of Standard deviation.	CO1	14 Marks

UNIT-II

3		Derive the expression for time response of a 2^{nd} order under damped system when subjected to a unit step input. Sketch the response. Define the following terms and find expressions for them. i) Rise time. ii) Peak time. iii) Peak overshoot. iv) Settling time.	CO2	14 Marks
		(OR)		
4		Derive the differential equation describing the dynamics of mechanical translation system subjected to step input force. Also write the differential equation describing the time response of a series R-L-C circuit when a step voltage is applied to it.	CO2	14 Marks

UNIT-III

5	a)	Apply and brief about the principle of change in capacitance for the measurement of physical parameters in industries.	CO5	7 Marks
	b)	A capacitive transducer uses two quartz diaphragms of area 750mm^2 separated by a distance of 3.5mm. A pressure of 900KN/m^2 when applied to a top diaphragm produces a deflection of 0.6mm. The capacitance is 370pF when no pressure is applied to the diaphragms. Find the value of capacitance after the application of a pressure of 900KN/m^2.	CO3	7 Marks
		(OR)		
6		Explain the principle of working, constructional details and applications of light dependent resistors.	CO1	14 Marks

UNIT-IV

7	a)	Describe the construction, theory and working of thermocouples.	CO1	7 Marks
	b)	Explain the various standards of thermo-electric laws.	CO1	7 Marks
		(OR)		
8	a)	Select and brief about the transducer that works on generation of voltage due to applied pressure.	CO4	7 Marks
	b)	A piezo-electric crystal having dimensions of 5mm x 5mm x 1.5mm and a voltage sensitivity of 0.055V-m/N is used for force measurement. Calculate the force if the voltage developed is 100V.	CO3	7 Marks

UNIT-V

9	What are the basics of fiber optic? Explain the Extrinsic fiber-optics sensors based on intensity modulation.	CO1	14 Marks
	(OR)		
10	Explain the principle of working, constructional details and applications of photodiodes. Draw the characteristics.	CO1	14 Marks

CODE No.: 16BT31201 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

DISCRETE MATHEMATICAL STRUCTURES

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Show that premises R $\rightarrow\neg$Q, R $\vee$ S, S $\rightarrow\neg$Q, P $\rightarrow$Q, P are inconsistent.	CO2	7 Marks
	b)	Show that $R \vee S$ is a valid conclusion from the premises $C \vee D, C \vee D \rightarrow \neg H, \neg H \rightarrow (A \wedge \neg B)$ and $(A \wedge \neg B) \rightarrow (R \vee S)$.	CO2	7 Marks
		(OR)		
2	a)	Prove that $\exists x(P(x) \wedge Q(x)) \Rightarrow \exists x p(x) \wedge \exists x Q(x)$. Is the converse true?	CO4	7 Marks
	b)	Prove that $\forall x(p(x) \rightarrow Q(x), \exists x P(x) \Rightarrow \exists x Q(x)$ by indirect method.	CO4	7 Marks

UNIT-II

3	a)	Show that the function f is one to one, where f: X$\rightarrow$Y and g: Y$\rightarrow$X such that g0f is an identity function.	CO1	7 Marks
	b)	Prove that every chain is a distributive lattice.	CO4	7 Marks
		(OR)		
4	a)	Show that a lattice homomorphism on a Boolean algebra which preserves 0 and 1 is a Boolean homomorphism.	CO1	7 Marks
	b)	Illustrate that (S, /) is a lattice, where S = (1,2,3,6) and / is for divisibility and also prove that this is a distributive lattice.	CO1	7 Marks

UNIT-III

5	a)	Examine whether given set 'S', where S = {0,1,2,3,4,5} can be semi group under binary operation Θ5.	CO2	7 Marks
	b)	Discuss that monoid homomorphism preserves the property of invertibility with an example.	CO5	7 Marks
		(OR)		
6	a)	Examine the relation a * b = a + b - ab for all a, b $\in$ G is a group or not.	CO2	7 Marks
	b)	Show that i) a*b=b*a ii) b*b=a on the relation ({a, b},*) be a semi group where a*a=b.	CO1	7 Marks

UNIT-IV

7	a)	Determine the number of positive integers n such that 1$\leq$n$\leq$100 and n is not divisible by 2,3 or 5.	CO4	7 Marks
	b)	Find the number of committees of 5 that can be selected from 7 men and 5 women, if the committee consists of at least 1 man and 1 woman.	CO1	7 Marks
		(OR)		
8	a)	Solve the Recurrence Relation $\mathbf{a_n - 7a_{n-1} + 10a_{n-2} = 0,\ n >= 2}$ where the initial conditions are a_0=10 and a_1=41 using generating functions.	CO5	7 Marks
	b)	Solve $\sqrt{a_n} - \sqrt{a_{n-1}} - 2\sqrt{a_{n-2}} = 0$ where $a_0 = a_1 = 1$.	CO5	7 Marks

UNIT-V

9	a)	Illustrate isomorphism of graphs with an example.	CO2	7 Marks
	b)	Define Spanning Tree. Explain DFS algorithm with an example.	CO1	7 Marks
		(OR)		
10	a)	Prove that a simple graph with n vertices must be connected if it has more than$(n-1)(n-2)/2$ edges.	CO1	7 Marks
	b)	Show that the K7 has Hamiltonian graph. How many edge disjoint Hamiltonian cycles are there in K_7 ? List all the edge-disjoint Hamiltonian cycles. Is it Eulerian graph?	CO1	7 Marks

CODE No.: 16BT31501 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

OPERATING SYSTEMS

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Differentiate between preemptive and non-preemptive scheduling.	CO1	7 Marks
	b)	Illustrate the purpose of fork system call with an example.	CO1	7 Marks
		(OR)		
2	a)	Explain briefly about Inter Process Communication.	CO1	7 Marks
	b)	Name the common services provided by an operating system. Explain them.	CO1	7 Marks

UNIT-II

3	a)	Discuss how Reader's Writer's problem can be solved using semaphores.	CO2	7 Marks
	b)	With the help of a system model, explain a deadlock and discuss necessary conditions that must hold simultaneously in a system for a deadlock to occur.	CO2	7 Marks
		(OR)		
4	a)	What are semaphores? Explain Binary and Counting semaphores with an example.	CO2	7 Marks
	b)	Elucidate the concept of RACE condition? Explain Reader's-Writer's problem with semaphore in detail.	CO2	7 Marks

UNIT-III

5	a)	Given memory partitions of 100K, 500K, 200K, 300K and 600K. Apply first fit, best fit and worst fit to place 212K, 417K, 112K, 426K.	CO2	7 Marks
	b)	Illustrate about translation lookaside buffer (TLB) in detail.	CO2	7 Marks
		(OR)		
6	a)	What is locality of reference? Differentiate between paging and segmentation.	CO2	7 Marks
	b)	Explain the differences between: i) Logical and physical address space. ii) Internal and external fragmentation.	CO2	7 Marks

UNIT-IV

7	a)	Write about bit vector free space management technique.	CO1	7 Marks
	b)	Mention any five: i) File Attributes. ii) File Operations.	CO1	7 Marks
		(OR)		
8	a)	What are directories? List different types of directory structures with example.	CO1	7 Marks
	b)	Mention the advantages and disadvantages of directory structures.	CO1	7 Marks

UNIT-V

9	a)	List various applications of I/O interface.	CO5	7 Marks
	b)	Illustrate the problem when using a global table to represent an access matrix.	CO5	7 Marks
		(OR)		
10	a)	List any three different services provided by the kernel I/O subsystem.	CO5	7 Marks
	b)	Explain the benefit of using role-based access control.	CO5	7 Marks

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CODE No.: 16BT41202 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

JAVA PROGRAMMING

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the OOP paradigm.	CO1	7 Marks
	b)	Develop a Java program that read an integer between 0 and 1000 and adds all the digits in the integer.	CO3	7 Marks
		(OR)		
2	a)	Explain the access control defined in Java.	CO1	7 Marks
	b)	Develop a Java program using command line arguments and explain.	CO3	7 Marks

UNIT-II

3	a)	What is an interface? In what way it is different from class? Explain the similarities between classes and interfaces.	CO1	7 Marks
	b)	Assume a class MotorVehicle as described below: Data members: a) modelName b) modelNumber c) modelPrice Methods: a)display() method to display the name, price and model number. Define another class named Car that inherits the class MotorVehicle and has the following: Data members: a) discountRate Methods: a) display() method to display the Car name, Car model number, Car price and the discount rate. b) discount method to compute discount. Create the classes MotorVehicle and Car with suitable Constructors and implement them.	CO6	7 Marks
		(OR)		
4		Design an interface with a method reversal. This method takes a string as its input and returns the reversed string. Create a class String Reversal and implement the method.	CO3	14 Marks

UNIT-III

5	a)	Summarize the concepts of exception handling.	CO1	7 Marks
	b)	Discuss Termination model and Presumptive models of exception handling.	CO4	7 Marks
		(OR)		
6		What is multithreading? Give an example of an application that needs multithreading.	CO1	14 Marks

UNIT-IV

7	a)	Create an Applet which gains focus shows “focus gained” in the status bar.	CO5	7 Marks
	b)	Summarize the following. i) Limitations of AWT. ii) Adapter classes. iii) Lists and choice.	CO4	7 Marks
		(OR)		
8	a)	Explain in detail about Java Collection Framework.	CO1	11 Marks
	b)	Explain Hash table with syntax.	CO1	3 Marks

UNIT-V

9	a)	List and explain the different situations in which the item Event is generated. Develop the event handler for the item Event.	CO2, CO4	7 Marks
	b)	What are the ServletContext and ServletConfig objects? What are Servlet environment objects?	CO1	7 Marks

(OR)

10		List the different methods of Java Servlet. What are the functions of Servlet container?	CO2	14 Marks

CODE No.: 16BT50502 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

LINUX PROGRAMMING

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe the characteristics of unix programs.	CO1	4 Marks
	b)	List out the programming languages available for linux system.	CO1	10 Marks
		(OR)		
2	a)	Write a linux program to print helloworld.	CO3	7 Marks
	b)	Illustrate importance of GNU project and list the major examples of software from GNU project.	CO5	7 Marks

UNIT-II

3	a)	Define unix shell. Explain the shell environment.	CO2	10 Marks
	b)	Write a shell program to print a multiplication table of a number given from command line.	CO6	4 Marks
		(OR)		
4	a)	Explain the **grep** family of commands in detail with suitable examples.	CO1	7 Marks
	b)	Discuss about environment and parameter variables.	CO1	7 Marks

UNIT-III

5	a)	What is File? Explain File system structure in Linux.	CO1	4 Marks
	b)	Discuss the following system calls with example. i) Read. ii) Write. iii) Open. iv) Unmask. v) Close.	CO1	10 Marks
		(OR)		
6	a)	Write a shell script to display a file which has read and write and execution permissions.	CO4	7 Marks
	b)	Discuss about system calls and device drivers.	CO1	7 Marks

UNIT-IV

7	a)	Describe execlp command with example.	CO3	7 Marks
	b)	Illustrate the working principle of parent process and child process using fork command.	CO5	7 Marks
		(OR)		
8	a)	Analyze the need for zombie process with example.	CO2	6 Marks
	b)	Write a filter program that reads from its standard input and writes to its standard output converting into uppercase by using shell redirection.	CO4	8 Marks

UNIT-V

9	a)	Specify the address format of sockets.	CO1	2 Marks
	b)	Examine the process of naming socket, creating socket queue and accepting connections	CO2	12 Marks
		(OR)		
10	a)	Write a program to connect to a network socket via loop back.	CO6	7 Marks
	b)	Discuss netstat command with example.	CO1	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2018

STRUCTURAL ANALYSIS - I

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. The stresses at a point in a bar are 250N/mm^2 (tensile) and 125N/mm^2 (compressive). Determine the resultant stress in magnitude and direction on a plane inclined at 60^0 to the axis of the major principal stress. Also determine the maximum intensity of shear stress in the material at the point.

2. a) When do you use Macaulay's method for determining the deflections and slopes of a beam? Give an example.
b) Determine the deflection and slope at the free end of a cantilever of span 6m, subjected to UDL of 3kN/m acting between the mid span and free end. Take EI=10^4kN/m^2.

3. A cantilever 3m long has moment of inertia 800cm^4 for 1m length from the free end, 1600cm^4 for the next 1m length 2400cm^4 for the last 1m length. At the free end a load of 10kN acts on the cantilever. Determine the slope and deflections at the free end of the cantilever. Take Young's modulus E = 210GN/m^2.

4. What are the assumptions made in the Euler's theory? Derive the Euler's critical load formula for long column with one end fixed and the other end hinged.

5. A solid circular shaft is subjected to a bending moment of 67kNm and a torque of 32kNm. Design the diameter of the shaft according to:
i) The Maximum Principal Stress Theory.
ii) The Maximum Shear Stress Theory.
iii) The Maximum Distortion Energy Theory.
Take Poisson's ratio = 0.29, the stress at elastic limit of the material is 285MPa and the factor of safety = 3.0.

6. Determine the principal moments of inertia for an unequal 'L' angle section of size 80 X 50 X 8 mm.

7. A cantilever AB of span 6m is fixed at the end A and propped at the end B. It carries a point load of 60kN at the mid span. Level of the prop is the same as that of the fixed end. Find the reaction at the prop. Also draw the Shear force and Bending moment diagrams.

8. A continuous beam ABC covers two consecutive spans AB and BC of lengths 4m and 6m, carrying uniformly distributed loads of 6kN/m and 10kN/m respectively. If the ends A and C are simply supported, find the support moments at A, B and C. Draw SF and BM diagrams also.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2018

FLUID MECHANICS - II

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Define Boundary layer thickness, Displacement thickness and Momentum thickness and give expressions for the same.
b) Explain boundary layer separation and indicate the methods of controlling separation.

2. a) Derive the condition for best side slope of the most economical trapezoidal channel.
b) Find the side slope in a trapezoidal section of maximum efficiency which will carry the same flow as a half square section of the same area.

3. a) Explain the term hydraulic jump. Derive an expression for the depth of hydraulic jump in terms of the upstream Froude number.
b) Briefly explain the classification of surface profiles.

4. a) Derive an expression for the force exerted by a jet of water on moving inclined flat plate in the direction of the jet.
b) A jet of water having a velocity of 45m/s impinges without shock on a series of vanes moving at 15m/s. The direction of motion of the vanes is inclined at 20° to that of jet. The relative velocity at outlet is 0.9 of that at inlet and absolute velocity of water at exit is to be normal to the motion of vanes. Find vane angles at inlet and outlet.

5. a) With the help of neat diagram, explain the construction and working of a Pelton wheel turbine.
b) What is a draft tube? Why is it used in a reaction turbine? What are the uses of a draft tube? What are the different types of draft tubes?

6. a) Derive an expression for specific speed of a turbine and its uses.
b) Define unit discharge and derive the equation for the same. What are its uses? How is it different from specific speed of a turbine?

7. a) Discuss working of a centrifugal pump with a neat sketch.
b) Two geometrically similar pumps are running at the same speed of 1200 r.p.m. The first one has an impeller diameter of 0.35m and lifts water at 20 lps against a head of 18m. Determine the size of the impeller and head developed by the second pump to deliver half of the discharge.

8. a) What are the different types of hydropower plants? Explain each one briefly.
b) Explain the terms load factor, plant factor and utilization factor.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2018

CONSTRUCTION, PLANNING AND PROJECT MANAGEMENT

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain in detail the design of shallow foundations.
b) Explain the combined footing and spread footing in detail with figures.

2. a) Explain in detail the different types of floors.
b) Explain the types of pitched roofs.

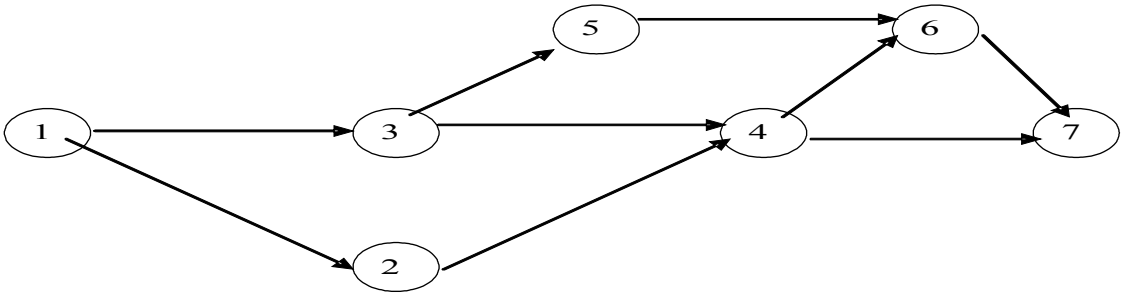
3. a) Explain about fire resistant construction.
b) State the objectives of plastering and pointing. Describe the various types of pointing.

4. a) Explain in brief about the Workmen's compensation act of 1923 and Minimum wages act of 1948.
b) Discuss about labour problems and labour legislation in India.

5. a) Explain the functions of Material management departments.
b) Explain the factors affecting the cost owning and operating the equipment.

6. a) Explain the methods of planning and programming problems.
b) Explain the Milestone charts.

7. a) Define an event and an activity. Differentiate between the two.
b) For the network shown in figure, prepare a table showing a list of predecessors, immediate predecessors, successors and immediate successors to each of the events.



8. From the data given in table, prepare the network diagram, decide the completion period and the critical path schedule.

Activity item	Duration in Days	Activities immediately	
		Preceding	Following
A	4	None	C,D
B	5	None	D
C	7	A	E,F
D	6	A,B	G
E	8	C	None
F	5	C	None
G	6	D	None

CODE No.:10BT40205 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2018

TRANSFORMERS AND INDUCTION MACHINES

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the operation of a single phase transformer on load with the help of phasor diagrams.
b) What are the types of transformers? Explain the constructional details of shell type transformers.

2. a) Define the Regulation of transformer and also deduce the condition for zero voltage regulation.
b) In a transformer, the core loss is 100W at 40Hz and 72W at 30Hz. Find the Hysteresis and Eddy current losses at 50Hz.

3. a) Explain the procedure to conduct short-circuit test on a single phase transformer.
b) Find the saving of copper in an auto transformer when compared to an ordinary transformer.

4. a) What are the various three-phase transformer connections? Explain the Scott connection with neat diagrams.
b) An ideal 3-phase step down transformer connected in star/delta delivers power to a balanced 3-phase load of 100 kVA at 0.8 p.f. The input line voltage is 11kV and the phase to phase turns ratio is 10. Determine the line voltages, line currents, phase voltages and phase currents on both primary and secondary side.

5. a) Explain the constructional details of a 3-phase squirrel cage induction motor.
b) A 6-pole, 50Hz squirrel cage induction motor runs on no load at a shaft speed of 970 r.p.m. Calculate the percentage slip and the frequency of induced current in the rotor.

6. a) Explain cogging and crawling in squirrel cage induction motor.
b) Explain the principle of induction generator.

7. a) Explain the tests performed to determine the circuit parameters of equivalent circuit of three phase induction motors.
b) Explain air-gap power, internal mechanical power developed and shaft power. Deduce a relationship between them.

8. Discuss various speed control methods of 3-phase induction motor.

CODE No.:10BT40221 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2018

PRINCIPLES OF ELECTRICAL ENGINEERING

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Obtain transmission parameters and explain its condition for symmetry and reciprocity.
b) In a two port network $\mathbf{Z_{11} = 2\ \Omega,\ Z_{12} = Z_{21} = 5\Omega,\ Z_{22} = 1\Omega}$, find:
i) h-parameter. ii) ABCD parameter.

2. a) Design constant-K Low pass filter.
b) Design m-derived T section for High pass filter.

3. Explain Bridged-T attenuator and also design it with an attenuation of 20dB and terminated in a load of 500Ω.

4. a) Explain different types of DC machines.
b) Explain the various losses in DC machines.

5. a) Explain relationship between phase and line quantities.
b) A 3-phase load has a resistance of 10Ω in each phase and is connected star and delta against a 400V, 3-Phase supply. Compare the power consumed in both cases.

6. Explain in detail about open circuit test and short circuit test.

7. a) Explain the principle of operation of an alternator.
b) With neat diagram, explain the construction of Squirrel cage Induction Motor.

8. Write short notes on:
i) Shaded pole motor. ii) Stepper motor. iii) AC servo motor.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2018

KINEMATICS OF MACHINERY

[Mechanical Engineering]

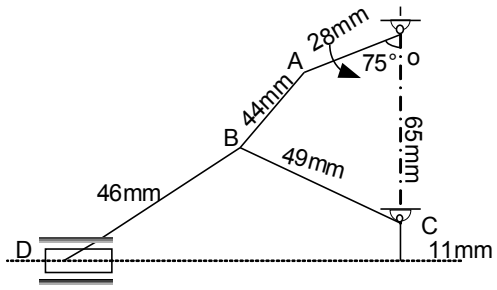
Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What is kinematic Link? Classify it.
b) Explain crank and slotted lever mechanism with neat sketch.

2. Explain the following with the help of neat sketch.
i) Peaucellier mechanism. ii) Robert mechanism.

3. a) What is coriolis acceleration? Determine the coriolis acceleration.
b) In figure the angular velocity of crank OA is 500 rad/sec, determine the linear velocity of slider D and the angular velocity of a link BD, when the crank is inclined at an angle of 75° to the vertical. The dimensions of the various links are OA = 28mm, AB = 44mm, BC = 49mm, BD = 46mm. The centre distance from the centers of rotation O and C is 65mm. The path of travel of the slider is 11mm below the fixed point C. The slider moves around a horizontal path and OC is vertical.



4. a) What is the condition for correct steering? Sketch and show the two main types of steering gears and discuss their relative advantages.
b) Sketch the polar velocity diagram of a Hooke's joint and mark its salient features.

5. a) What is a displacement diagram? Why is it necessary to draw it before drawing a cam profile?
b) Derive the relations for velocity and acceleration for a convex cam with a roller follower.

6. a) Define the following.
i) Addendum. ii) Total Depth.
b) State and prove the fundamental Law of gearing with neat sketch.

7. a) Obtain an expression for the length of a chain.
b) Explain the phenomena of 'slip' and 'creep' in a belt drive.

8. a) Define a simple gear train with an example.
b) An epicyclic train is composed of a fixed annular wheel A having 150 teeth. Meshing with A is a wheel B which drives wheel D through an idle wheel C, D being concentric with A, wheels B and C are carried on an Arm which revolves clock wise at 100 r.p.m about the axis of A and D. If the wheels B and D have 25 and 40 teeth respectively, find the number of teeth on C and the speed and the sense of rotation of C.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2018

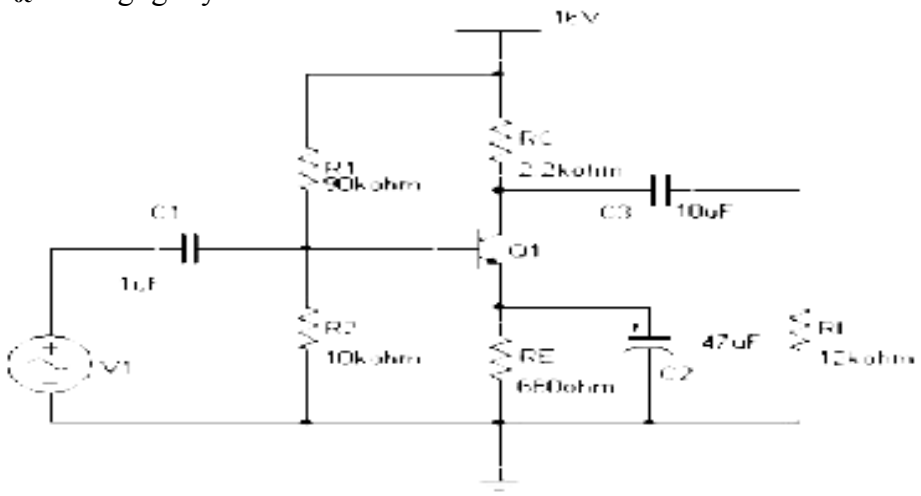
ELECTRONIC CIRCUIT ANALYSIS

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) For the common emitter amplifier shown, determine the peak-to-peak output voltage for a sinusoidal input voltage of 30mV peak-to-peak. Assume C_1, C_2 and C_3 are large enough to act as short circuit at the input frequency. Consider h_{ie} = 1.1KΩ, h_{fe} = 100, h_{re} & h_{oe} are negligibly small.



b) State Miller's theorem. Specify its relevance in the analysis of a BJT amplifier.

2. Derive expressions for lower and upper cutoff frequencies of multi stage amplifier.

3. a) Derive the expression Hybrid π conductance's g_{ce}, $g_{bb'}$ of a transistor.
b) Explain how hybrid π parameters g_m and g_{ce} vary with I_c and V_{ce} temperature.

4. a) Differentiate between cascaded and folded cascade configurations.
b) Discuss effects of different type of Loads to common source MOS amplifier.

5. a) Explain the concept of feedback with a neat block diagram and derive the expression for gain with feedback.
b) The open loop gain of an amplifier is 50 and its bandwidth is increased to 25KHz. What will be the required feedback ratio?

6. a) State the merits and demerits of negative feedback in amplifiers.
b) Derive an expression for Input resistance of voltage series feedback amplifier.

7. a) What is the need for class-AB operation of large signal amplifier.
b) Derive the power conversion efficiency of class-C amplifier.

8. a) Discuss the applications of tuned amplifiers.
b) Explain the need for stagger tuned amplifier.

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CODE No.:10BT40502 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2018

OBJECT ORIENTED PROGRAMMING

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the OOPs concepts with necessary examples.
b) What is constructor? Discuss different types of constructors with suitable examples.

2. a) Differentiate between method overloading and method overriding.
b) Explain about runtime polymorphism with example.

3. a) Discuss about Java Arrays with suitable examples.
b) What is meant by overloading? Explain with suitable example.

4. a) Is Java support multiple inheritance? If yes How?
b) Explain the terms ***final***, ***super***, and ***this*** key words with examples.

5. a) What is a package? Write a general form of a multileveled package statement.
b) Write a Java program to implement Stack operations using packages.

6. a) Explain Applet life cycle with a neat diagram.
b) List and explain any five graphics methods with an example program.

7. a) Explain about AWT class hierarchy.
b) Compare all layout managers and show the differences.

8. Explain the following with an example:
i) JCheckBox
ii) JRadioButton.

CODE No.:10BT41002 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December – 2018

TRANSDUCERS IN INSTRUMENTATION

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the generalized block diagram of measuring system with example.
b) What is a Transducer? Give the classification of Transducers with an example.

2. a) Define the following:
i) Sensitivity ii) Linearity iii) Hysteresis iv) Calibration
b) Explain the second order measurement system and its response to step input.

3. a) Explain the construction and working of potentiometers.
b) Describe the construction and working of RTD.

4. a) What is LVDT? Explain its construction, principle and applications.
b) Explain about Electromagnetic transducer with an example.

5. a) Explain how capacitive transducer can be used for measurement of displacement liquid level in the tank.
b) Explain about capacitive strain gage.

6. a) Explain the construction and working of piezoelectric transducer.
b) Explain the construction and working of pyrometric transducer.

7. a) Explain the charge amplifier and derive its output equation and frequency response.
b) Explain chopper amplifier.

8. a) Write short notes on photodiodes and phototransistors.
b) Explain in detail about MEMS.

CODE No.:10BT41201 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2018

DATA COMMUNICATIONS

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. Explain the architecture of OSI reference model and its service primitives and parameters in detail.

2. a) List and describe the four primary constants of a transmission line.
b) List and describe the various types of coupling loss associated with optical fibres.

3. a) What is multiplexing? What are the most predominant methods of multiplexing?
b) A PCM-TDM system multiplexes 24 voice-band channels each sample is encoded into 7 bits and a framing bit is added to each frame. The sampling rate is 9000 samples/second. Determine the line speed in bps.

4. a) What is radio wave? What are the optical properties of radio waves?
b) Describe a geostationary satellite and their advantages and disadvantages.

5. a) Explain in detail the basic telephone call procedures.
b) Explain in detail about crosstalk in telephone circuits.

6. a) Describe the characteristics and applications of cellular and cordless technologies.
b) What is Hand-off in cellular telephony? List and explain about each type of hand-off in detail.

7. a) Define error detection and error correction.
b) Explain the concept of vertical redundancy checking.

8. a) Describe the basic blocks of a voice-band modem.
b) Explain the concept of AT command set.

CODE No.:10BT50501 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2018

DESIGN AND ANALYSIS OF ALGORITHMS

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What is algorithm and what are its characteristics?
b) Define time complexity. Describe different notations used to represent there complexities.

2. a) Explain the properties of connected components.
b) Explain the properties of biconnected components.

3. a) Write the recursive binary search algorithm. Also find its time complexity.
b) Write and analyze the algorithm to find maxima and minima.

4. a) Define time complexity. Describe different notations used to represent the complexities of algorithm.
b) Derive the function $\mathbf{f(n)= 12n^2+6n}$ is $\mathbf{0(n^3)}$ and $\mathbf{w(n)}$.

5. a) Explain Traveling Sales Person problem with example.
b) Differentiate between Dynamic Knapsack and Branch and Bound Knapsack problem.

6. a) Describe graph coloring problem and its time complexity.
b) Write an algorithm of 8-queens problem using backtracking.

7. a) Explain the method of reduction to solve TSP problem using Branch and Bound.
b) Explain the principles of LIFO Branch and Bound.

8. a) Explain the classes of NP-hard and NP-complete.
b) Write a non-deterministic Knapsack algorithm.

CODE No.:10BT50502 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2018

MICRO-PROCESSOR AND INTERFACING

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Describe in detail about the register organization of 8086 microprocessor.
b) Develop a macro called ADD32 that adds the 32-bit contents of DX-CX to the 32-bit contents of BX-AX.

2. a) Write an ALP to exchange two blocks of 8 bit numbers using MOVSB and STOSB instructions.
b) Write an ALP in 8086 to add two 8 bit decimal numbers.

3. a) Explain with a neat diagram interfacing of 8257 with 8086.
b) Explain how static RAMs are interfaced to 8086. Give necessary interface diagram assuming appropriate signals and memory size.

4. a) Explain the modes of operation of ports of 8255 Programmable Peripheral Interface.
b) Discuss the Control Word formats of 8255 Programmable Peripheral Interface.

5. a) Discuss priority of interrupts of 8086 Microprocessor.
b) Discuss Initialization Command Word (ICW) formats of 8259 Programmable Interrupt Controller.

6. a) Briefly explain about TTL to RS 232C and RS 232C to TTL conversion.
b) Discuss briefly about the methods of Data Communication.

7. a) List all the additional features that the 80386 microprocessor has over 8086.
b) Explain the architecture of RISC processor.

8. a) Explain the serial port operation of 8051 microcontroller.
b) Explain the interrupt structure of 8051 microcontroller.

CODE No.:10BT50504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations December - 2018

OPERATING SYSTEMS

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss operating system from user point of view and system point of view.
b) Distinguish between Batch Systems and Time-sharing systems.

2. a) What is a process? Explain about process control block.
b) Explain different types of schedulers.

3. a) What is synchronization? Explain how semaphores can be used to deal with **n** process critical section problem.
b) Write notes on Reader writers' problem and the dining philosophers problem.

4. Write in detail about deadlock detection and recovery.

5. a) Write the similarities of paging and framing. Explain the structure of a page table.
b) Write short notes on thrashing.

6. a) What are different types of files supported by an operating system.
b) Explain contiguous and Indexed File allocation methods in detail.

7. a) Explain in detail any three disk scheduling algorithms with suitable example.
b) Write short notes on RAID structure.

8. a) Explain about access matrix.
b) Explain about security problem and program threat.

CODE No.:10BT40101 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2019

STRUCTURAL ANALYSIS - I

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. The tensile stresses at a point across two mutually perpendicular planes are 150N/mm^2 and 75 N/mm^2. Determine the normal, tangential and resultant stresses on a plane inclined at 30^0 to the axis of the minor stress.

2. A beam AB of span 6m is simply supported at the ends. The beam is subjected to a concentrated load of 5kN at a distance of 2m from left support A. The beam is also loaded with a uniformly distributed load of 3kN/m from the centre of span to right end B. Find the deflection at centre of span and slope at the left end A. Take E = 2 x 10^{5}N/mm^2 and I = 2100cm^4.

3. a) State and prove Moment area theorem II
b) Obtain expression for the deflection at the mid span of a simply supported beam subjected UDL over the entire span. Use moment area theorems.

4. Sketch the BMD and SFD for the fixed beam AB of span 6m, subjected to a couple 15kN.m at mid span. The flexural rigidity of left half span is twice that of right hand side remaining span (EI).

5. The load on a bolt consists of an axial pull of 20kN together with a transverse shear of 10kN. Determine the diameter of the bolt according to (i) maximum principal stress theory (ii) maximum shear stress theory, (iii)maximum strain theory and (iv) strain energy theory. Elastic limit in tension is 285N/mm^2 and a factor of safety of 3 is to be applied. Take μ=0.3.

6. Determine the principal moments of inertia for an unequal 'L' angle section of size 60 x 40 x 6mm.

7. A fixed beam AB is having a span of 6m. Two concentrated loads of 75kN and 50kN acts on the beam respectively at 2m and 4 m from the left support A. Find the fixing moments at the ends and reactions at the supports. Also draw SFD and BMD.

8. A continuous beam ABC covers two consecutive spans AB and BC of lengths 4m and 6m, carrying uniformly distributed loads of 6kN/m and 10kN/m respectively. If the ends A and C are simply supported, find the support moments at A, B and C. Draw SF and BM diagrams also.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2019

KINEMATICS OF MACHINERY

[Mechanical Engineering]

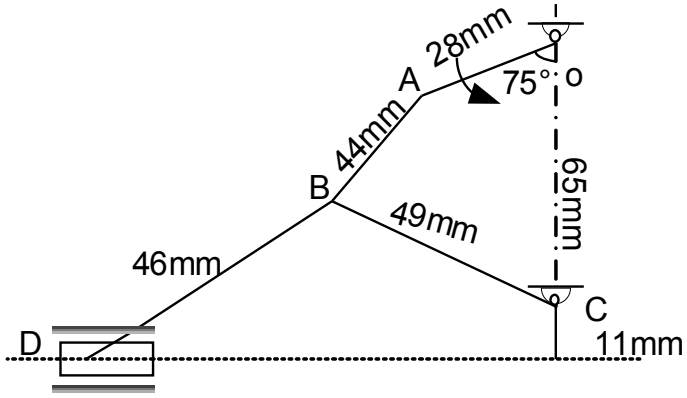
Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Define the following with suitable examples.
i) Link ii) Machine
b) Difference between:
i) Higher pair and lower pair ii) Machine and Structure

2. Explain with the help of neat sketch:
i) Peaucellier mechanism with Proof ii) Robert mechanism

3. a) What is coriolis acceleration? Determine the coriolis acceleration.
b) In figure the angular velocity of crank OA is 500 rad/sec, determine the linear velocity of slider D and the angular velocity of a link BD, when the crank is inclined at an angle of 75° to the vertical. The dimensions of the various links are OA = 28mm, AB = 44mm, BC = 49mm, BD = 46mm. The centre distance from the centers of rotation O and C is 65mm. The path of travel of the slider is 11mm below the fixed point C. The slider moves around a horizontal path and OC is vertical.



4. a) What is the condition for correct steering? Sketch and show the two main types of steering gears and discuss their relative advantages.
b) Sketch the polar velocity diagram of a Hooke's joint and mark its salient features.

5. a) Enumerate different types of cams and followers commonly used. State their relative merits and demerits.
b) Derive expressions for displacement, velocity and acceleration for roller follower operated by a tangent can when the contact is on straight flank.

6. a) Derive an expression for length of path of contact.
b) Two gear wheels mesh externally to give a velocity ratio of 3:1. The teeth are of involute form; module=6mm. addendum = one module, pressure angle = 20^0 . The pinion rotates at 90 r.p.m.
Find: i) number of teeth on each wheel to avoid interference.
ii) the length of path of contact.

7. a) How is the length of open and crossed type Belts determined? What is the difference between an exact and approximate length?

b) A leather belt connects a 1.2m diameter pulley on a shaft running at 250 r.p.m. With another pulley running at 500rpm, the angle of lap being 175°, the max permissible load in the belt is 1.35KN and the co-efficient of friction is 0.25. If the initial tension in the belt may have any value between 900N and 1100N, what is the max. power in the belt should transmit?

8. a) What is an epicyclic gear train? In what manner does it differ from a simple or compound gear train?

b) A compound gear train consists of six gears. The number of teeth on each gear is as follows:

Gear	A	B	C	D	E	F
No. of teeth	60	40	50	25	30	24

Determine: i) speed of the output shaft. ii) output torque. iii) holding torque.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2019

ELECTRONIC CIRCUIT ANALYSIS

[Electronics and Communication Engineering,Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What are the different types of feedback topologies? Explain with diagrams.
b) An amplifier has Aυ - 1000 ± 100. Determine the feed back needed to keep the gain with in ± 0.1%. Find $A_{\upsilon f}$.

2. What are high input resistance amplifiers circuits? Explain and analyze any one circuit with neat circuit diagram and equivalent circuits.

3. a) Describe how an emitter follower behaves at high frequencies.
b) A BJT has following parameters measured at I_C = 1mAmp ; h_{ie}= 3kΩ; h_{fe}=100; f_T=4MHz; C_c= 2PF; C_e= 18 PF. Find $r_{bb'}$, $r_{b'e}$, g_m and f_H for R_L= 1kΩ.

4. a) Draw the circuit diagram of a common source FET amplifier along with its equivalent circuit. Derive expressions for A_V , R_{in} and R_{out}.
b) What is meant by small signal for analyzing a BJT based amplifier?

5. The output impedance may be calculated as the ratio of the open circuit voltage gain to short circuit current gain. Using this method, evaluate R_{of} and R_{of}' for:
i) Voltage shunt. ii) Current series.

6. a) Draw the equivalent circuit of a quartz crystal. What makes the quartz to produce stable oscillations?
b) A Wein bridge oscillator has a frequency of 500KHz. If the value of C is 1000pF, determine the value of R.

7. a) Explain the working of transformer coupled class A power amplifier with a diagram.
b) What is harmonic distortion and how it will be calculated?

8. a) Draw the small signal model of MOSFET and derive the expression for voltage gain of common source amplifier with unbypassed source resistance.
b) CD amplifier uses FET having r_d = 300kΩ and μ =15. Calculate the output impedance and voltage gain for the load R_L= 300kΩ.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2019

ELECTRO MAGNETIC WAVES AND TRANSMISSION LINES

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) State the superposition principle of electric fields due to system of discrete charges.
b) Find the energy required to assemble a uniform sphere of charge of radius 'b' and volume charge density 'ρ', in terms of energy density.

2. a) Define conduction current.
b) A spherical capacitor consists of an inner conducting sphere of radius 'R_i' and an outer conductor with spherical inner wall of radius 'R_o'. The space in between is filled with a dielectric permittivity **€**. Determine the capacitance.

3. a) Find the magnetic field due to a circular loop carrying current '**I**' at a distant point from the loop.
b) Find the flux density at a point due to a long filamentary conductor carrying a current of 20Amps in **z**- direction.

4. a) Discuss about the inconsistency of Ampere's law and hence concept of displacement current density.
b) Explain the importance of displacement current.

5. Prove the following in a uniform plane wave.
i) Electric field and magnetic field are perpendicular to each other.
ii) Fields are transverse to the direction of propagation.

6. a) State and prove poynting theorem.
b) A plane wave traveling in a free space has an average poynting vector of 5watts/m^2. Find the average energy density.

7. a) Derive an expression for input impendence of a transmission line terminated with a load of Z_R
b) Characteristic impendence of a uniform transmission line is 2KΩ/m at 800Hz and propagation constant is $0.054\angle 87^0$ /m. Find the primary constants.

8. Write short notes on the following.
i) Types of Transmission lines.
ii) Quarter wave transformer.
iii) Distortion less Condition in Transmission lines.
iv) Reflection coefficient and VSWR in transmission lines.

CODE No.:10BT40501 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2019

COMPUTER ARCHITECTURE AND ORGANIZATION

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the functional components of a computer.
b) Explain the BCD adder with help of a neat sketch and by a taking an example.

2. a) Explain about stack organization used in processors. What do you under stand by register stack and memory stack?
b) Compare the RISC and CISC architectures.

3. a) Define the following:
i) Micro-operation
ii) Microinstruction
iii) Micro program
iv) Micro code
v) Control Memory
b) How do you map a computer instruction to a microinstruction address? Explain.

4. What is a pipe lining? Explain any two pipe lining techniques in detail.

5. a) Explain the memory hierarchy in detail.
b) Explain RAID.

6. Explain about IOP with block diagram.

7. Explain about inter processor communication and synchronization.

8. Explain RISC Architecture.

CODE No.:10BT50504 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2019

OPERATING SYSTEMS

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Detail on the objectives and functions of an OS.
b) Write notes on the various system calls.

2. a) What is a process? Explain about process control block.
b) Explain different types of schedulers.

3. a) What is race condition? Explain about critical section problem.
b) Explain role of semaphores for process synchronization.

4. a) Explain resource allocation graph.
b) Write about deadlock prevention methods.

5. a) Write about partitioned memory allocation.
b) What is virtual memory? Write about demand paging.

6. a) Write about different directory structures.
b) Explain different disk free space management methods.

7. a) How operating system performs the function of Input and Output?
b) Explain the SCAN disk scheduling algorithm and its advantages and disadvantages.

8. a) Explain the principles of protection.
b) Explain about security problem and program threat.

CODE No.:14BT3BS03 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

PROBABILITY AND STATISTICS

[Civil Engineering, Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Define the following. 8 Marks
i) Discrete random variable.
ii) Continuous random variable.
iii) Probability mass function.
iv) Probability density function.

b) Two dice are thrown. Let X assign to each point (a, b) in S the maximum of its numbers i.e., $X(a, b) = max(a, b)$. Find the probability distribution. Also find the mean and variance of the distribution. 6 Marks

(OR)

2 a) State and prove Baye's theorem of probability. 7 Marks

b) Of the three men, the chances that a politician, a business man or an academician will be appointed as a Vice-Chancellor (V.C) of a University are 0.5, 0.3, 0.2 respectively. Probabilities that research in promoted by these persons if they are appointed as V.C. are 0.2, 0.7, 0.8 respectively. 7 Marks
i) Determine the probability that research is promoted.
ii) If research is promoted, what is the probability that V.C is an academician?

UNIT-II

3 a) Find the mean and variance of the Binomial distribution. 7 Marks

b) A manufacturer of Cofter Pins knows that 5% of his product is detective. Pins are sold in boxes of 100. He guarantees that not more than 10 pins will be detective. What is the approximate probability that a box will fail to meet the guaranteed quality? 7 Marks

(OR)

4 a) If X is a poisson variate such that $3P(X = 4) = ½ P(X = 2) + P(X = 0)$, calculate: 7 Marks
i) the mean of X. ii) $P(X \leq 2)$.

b) The marks obtained in statistics in a certain examination found to be normally distributed. If 15% of the students ≥60 marks, 40% <30 marks, find the mean and standard deviation. 7 Marks

UNIT-III

5 a) Discuss the basic principles underlying control charts. Explain in brief how control limits are determined for (i) P – Chart, (ii) C – Charts. 8 Marks

b) The following are the number of hours which 10 students studied for an examination and the scores they obtained. 6 Marks

Number of hours studied : x	8	5	11	13	10	5	18	15	2	8
Score : y	56	44	79	72	70	54	94	85	33	65

Calculate Rank correlation coefficient.

(OR)

6 a) Explain the terms chance causes and assignable causes. 7 Marks

b) Calculate the coefficient of correlation from the following data. 7 Marks

X :	1	2	3	4	5	6	7	8	9
Y :	9	8	10	12	11	13	14	16	15

Also obtain the equations of the lines of regression and obtain an estimate of Y when X = 6.2.

UNIT-IV

7 a) The average marks scored by 32 boys are 72 with a standard deviation of 8. While that for 36 girls is 70 with a standard deviation of 6. Does this indicate that the boys perform better than girls at level of significance 0.05? 7 Marks

b) In a sample of 500 from a village in Rajasthan, 280 are found to be wheat eaters and the rest rice eaters. Can we assume that both articles are equally popular? 7 Marks

(OR)

8 a) A manufacturer claimed that atleast 95% of the equipment which he supplied to a factory confirmed to specifications. An examination of a sample of 200 pieces of equipment revealed that 18 were faulty. Test this claim at 5% level of significance. 7 Marks

b) A researcher wants to know the intelligence of students in a school. He selected two groups of students. In the first group there 150 students having mean IQ of 75 with a standard deviation of 15, in the second group there are 250 students having mean IQ of 70 with standard deviation of 20. Test whether the mean IQ of two groups differ significantly at 1% level of significance. 7 Marks

UNIT-V

9 Two random samples reveal the following results. 14 Marks

Sample	Size	Sample mean	Sum of squares of deviation from the mean
1	10	15	90
2	12	14	108

Test whether the samples came from the same normal population.

(OR)

10 From the following data, find whether there is any significant liking in the habit of taking soft drinks among the categories of employees. 14 Marks

Soft drinks	Employees		
	Clerks	Teachers	Officers
Pepsi	10	25	65
Thumpsup	15	30	65
Fanta	50	60	30

CODE No.:14BT30231 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

ELECTRICAL TECHNOLOGY

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Derive the emf equation of a DC generator.	7 Marks
	b)	A 4 pole, DC shunt generator, with a shunt field resistance of 100Ω and an armature resistance of 1Ω, has 378 wave connected conductors in its armature. The flux per pole is 0.02Wb. If a load resistance of 10Ω is connected across the armature terminals and the generator is driven at 1000 r.p.m, calculate the power absorbed by load.	7 Marks
		(OR)	
2		Why is a starter necessary for a motor? Explain the working of a three point starter with the help of a neat diagram.	14 Marks

UNIT-II

3		Obtain the equivalent circuit of a single phase transformer.	14 Marks
		(OR)	
4	a)	What are the losses occurring in transformer? Derive the expression for efficiency for efficiency and also condition for maximum efficiency.	8 Marks
	b)	A 230/115 V single phase transformer takes a no load current of 2A at a power factor of 0.2 lagging with low voltage winding kept open. If the low voltage winding is now loaded to take a current of 15A at 0.8 pf lagging. Find the current taken by high voltage winding.	6 Marks

UNIT-III

5		Derive the numerical relationship between: i) line and phase currents for a balanced delta connected system. ii) line and phase voltages for a balanced star connected system.	14 Marks
		(OR)	
6		In a star connected load each phase consists of a resistance of 50Ω in parallel with a capacitor of capacitance 16μF. When it is connected to a 400V, 3 phase, 50Hz supply. Calculate: i) the line current. ii) the power factor. iii) power absorbed. iv) total kVA.	14 Marks

UNIT-IV

7	a)	Discuss the types of three phase induction motors in detail.	10 Marks
	b)	A 3-phase, 4 pole, 50Hz induction motor is running at 1455 r.p.m. Find slip speed and slip.	4 Marks
		(OR)	
8	a)	Explain the classification of alternators.	7 Marks
	b)	A 4 pole, 50Hz star connected alternator has a flux per pole of 0.12Wb. It has a flux per pole of 0.12Wb. It has 4 slots per pole per phase, conductors per slot being 4. If the winding coil span is 150^0, find emf.	7 Marks

UNIT-V

9		Describe the construction and principle of operation of single phase induction motors.	14 Marks

(OR)

10	a)	List the applications of split phase and capacitor induction motors.	10 Marks
	b)	Calculate the stepping angle for a 3 stack, 16 tooth stepper motor.	4 Marks

CODE No.:14BT40101 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

STRUCTURAL ANALYSIS - I

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Explain clearly, the Mohr's circle method of finding out stresses in a rectangular element subjected to normal stresses p_1 and p_2 and shear stress q. Using the same method, find out the principal planes and principal stresses. 14 Marks

(OR)

2 The stresses acting at a point in a two dimensional stress system is shown in the Fig.1. Determine the principal stresses and the stresses acting on the plane AB. 14 Marks

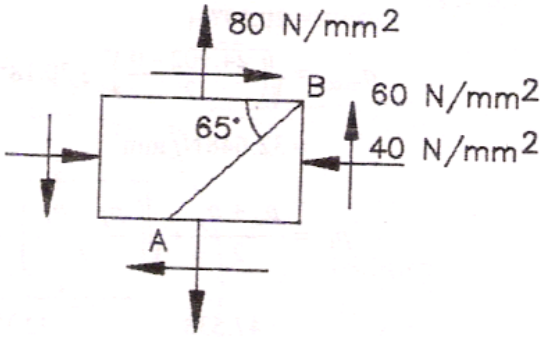


Fig.1

UNIT-II

3 A cantilever beam of length 7m, carries a point load at a distance of 4 m from the fixed end. Find the deflection and slope under the point load and at the free end using Macaulay's method. Take E = 2.1 x 10^5 MPa and I = 86 x 10^6 mm^4. 14 Marks

(OR)

4 Compute the maximum slope and deflection for the beam shown in Fig.2, using Moment-Area method. *EI* = 406,000 kNm^2. 14 Marks

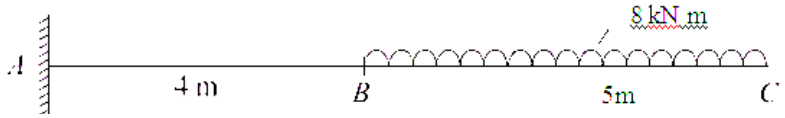


Fig. 2

UNIT-III

5 A hollow cast-iron column whose outside diameter is 220 mm and has a thickness of 20 mm is 5.4 m long and is fixed at both ends. Calculate the safe load by Rankine's formula using a factor of safety of 2.7. Find the ratio of Euler's to Rankine's loads. Take $E_{cast\ iron}$ = 107 GPa and Rankine's constant = 1/1650 for both ends pinned case and the crushing strength of the material as 565 MPa. 14 Marks

(OR)

6 A 5 m long circular column having fixed ends has 240 mm external diameter and 20 mm thickness. The column carries a load of 160 kN at an eccentricity of 25 mm 14 Marks

from its longitudinal axis. Determine (a) stresses in the extreme fibres of the cross-section and (b) maximum eccentricity so as to have no tension anywhere in its cross section. The modulus of elasticity of the material is 82 GPa.

UNIT-IV

7 A cantilever of span 4 m is supported at the free end to the level of fixed end. It carries a concentrated load of 20 kN at the centre of the span. Calculate the reaction at the prop and draw the S.F and B.M diagrams. 14 Marks

(OR)

8 A continuous beam ABC is simply supported at A, B and C and having AB = 6 m, BC = 4 m. The span AB carries a point load of 3 kN at 2 m away from the support A. The span BC is carrying a u.d.l of 1 kN/m. Find the reactions and bending moments at supports A, B and C. Also draw the S.F and B.M diagrams. 14 Marks

UNIT-V

9 A bolt is required to resist an axial tension of 45 kN and a transverse shear of 32 kN. Find the size of the bolt by: 14 Marks

i) the Maximum Principal Stress Theory
ii) the Maximum Strain Theory
iii) the Maximum Shear Stress Theory

The stress at elastic limit of the material is 270 MPa. Poisson's ratio = 0.29 and the factor of safety = 2.5.

(OR)

10 a) Derive the formula to find shear centre for a symmetrical channel section, from first principles. 7 Marks

b) Find the approximate location of shear centre for a symmetrical channel section having overall depth of 260 mm. Thickness of web and flanges is 20 mm. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

CONSTRUCTION, PLANNING AND PROJECT MANAGEMENT

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Discuss the suitability of the following types of floorings for different buildings: 14 Marks
i) Terrazo flooring ii) Floorings of Linoleum, Rubber and Cork
iii) Granolithic flooring iv) Mosaic flooring
v) Tiled flooring vi) P V C flooring
vii) Glass flooring

(OR)

2 a) Give the stone masonry classification. Describe the construction of walls by Ashlar fine masonry. 7 Marks
b) What is the significance of bonding in brickwork? Differentiate between English bond and Flemish bond with the help of neat sketches. 7 Marks

UNIT-II

3 Explain about plastering and pointing. 14 Marks

(OR)

4 What is the significance of scaffolding and form work? Explain. 14 Marks

UNIT-III

5 Enumerate various types of organization and describe their merits and demerits. 14 Marks

(OR)

6 a) List out various excavation equipments. Give the applications of each one. 7 Marks
b) Indicate different compaction equipments. Briefly describe the suitability of each one. 7 Marks

UNIT-IV

7 a) Discuss the role of management in project execution. 7 Marks
b) Explain the methods of planning and programming. 7 Marks

(OR)

8 Differentiate between CPM network and PERT network. Illustrate your answer by drawing the two types of networks for a housing construction project. 14 Marks

UNIT-V

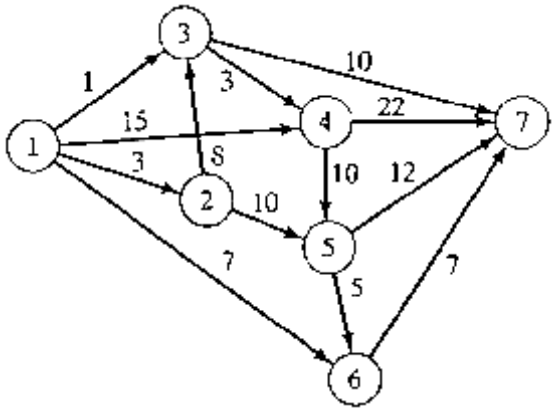
9 a) Differentiate clearly between most likely time estimate, mean time and expected time. 5 Marks

b) The time estimates for three activities A, B and C are as follows. Determine expected time and variance for each activity. Which activity has more reliable time estimates? 9 Marks

	Optimistic time	Most likely time	Pessimistic time
A	19	26	35
B	17	27	40
C	18	28	36

(OR)

10 For the network given below, compute E and L for each event and determine the total, free, independent and interfering floats and also identify the critical path. 14 Marks



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

FLUID MECHANICS - II

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	A flat plate 2m x 2m is immersed in water flowing with a velocity of 5m/s. Find the forces of drag and lift as 0.05 and 0.2 respectively	7 Marks
	b)	What is Von Karman momentum integral equation and where can it be applied.	7 Marks
		(OR)	
2		Give the characteristics of boundary layer along a thin flat plate.	14 Marks

UNIT-II

3		What are the various types of surface profiles? Also give the corresponding sketches.	14 Marks
		(OR)	
4	a)	How does the velocity vary in an open channel flow?	7 Marks
	b)	A rectangular channel carries water at the rate of 400 litres/s when bed slope is 1 in 2000. Find the most economical dimensions of the channel if C = 50.	7 Marks

UNIT-III

5		Obtain an expression for the force exerted by a jet of water on an inclined fixed plate in the direction of the jet and a jet of water of diameter 50mm moving with a velocity of 40m/s, strikes a curved fixed symmetrical plane at the centre. Find the force exerted by the jet of water in the direction of the jet, if the jet is defected through an angle of 120° at the outlet of the curved plate.	14 Marks
		(OR)	
6		A jet of water having a velocity of 15m/s strikes a curved vane which is moving with a velocity of 5m/s. The vane is symmetrical and is so shaped that the jet is defected through 120°. Find the angle of the jet at inlet of the vane so that there is no shock. What is the absolute velocity of the jet at outlet in magnitude and direction and the work done per unit weight of water? Assume the vane to be smooth.	14 Marks

UNIT-IV

7	a)	Give the working proportions of a Pelton wheel.	7 Marks
	b)	Give the necessity of governing of turbines.	7 Marks
		(OR)	
8		A reaction turbine works under a head of 6m. The guide blades are inclined at 30° to the tangent at periphery and the runner vanes make110° to the forward tangent at the periphery at inlet. If the discharge is radial and if all the exit velocity is wasted, find the hydraulic efficiency of the turbine. Assume velocity of flow to be constant. Also find the velocity of flow.	14 Marks

UNIT-V

9	Obtain an expression for the work done by the impeller of a centrifugal pump on water and explain the various efficiencies of a centrifugal pump.	14 Marks
	(OR)	
10	Define specific speed of a centrifugal pump and derive an expression for the same and explain the working procedure of an airlift pump with a neat sketch.	14 Marks

CODE No.:14BT40201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

SIGNALS AND NETWORKS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Define different test signals. Obtain relationship between the unit step function and the unit ramp function. 7 Marks

b) Determine whether each of the following systems defined below is: 7 Marks
i) causal. ii) linear. iii) stable.
(1) $y(n) = log_{10} |X(n)|$; (2) $y(n) = X(n) \sum f(n-2k)$.

(OR)

2 a) Determine the impulse response of the following casual system. 7 Marks
$Y(n) - Z\cos\theta\, y(n-2) + y(n-3) = X(n)$.

b) The sequence $x[n] = (-1)^n$ is obtained by sampling the continuous-time sinusoidal signal 7 Marks
$x(t) = \cos \omega_0 t$ at 1–ms intervals, i.e., $\cos(\omega_0 nT) = (-1)^n$, $T=10^{-3}$ s.
Determine three distinct possible values of ω_0.

UNIT-II

3 a) Design a m-derived low pass filter having a design resistance R_0=500Ω, cut-off frequency f_c=1500Hz and infinite attenuation frequency f_∞=2000Hz. 7 Marks

b) Write short notes on: 7 Marks
i) Cut-off frequency.
ii) Image impedance of a filter network.
iii) Composite filters.

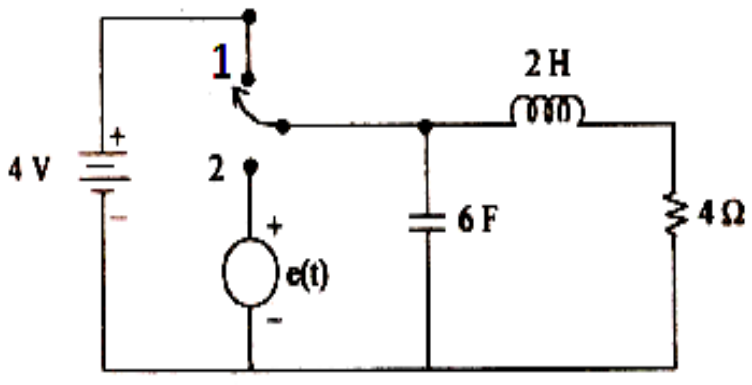
(OR)

4 a) Design a constant - K low pass T and π section filters to be terminated in 600Ω having cut of frequency of 3KHz. 9 Marks

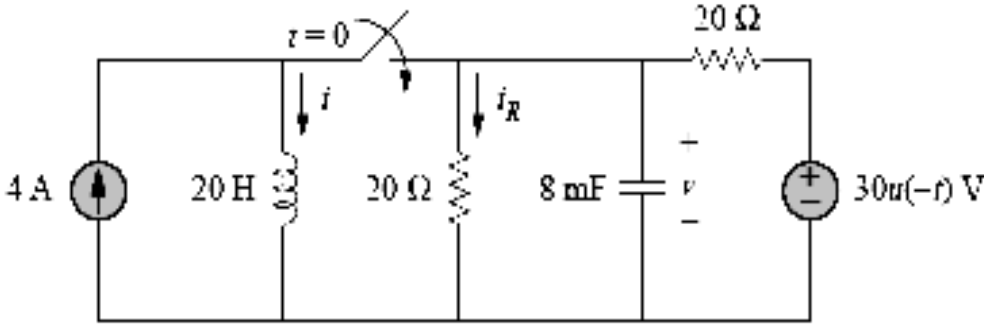
b) Discuss disadvantages of K type filters. How these can be overcome using n-derived section. 5 Marks

UNIT-III

5 a) For the circuit shown below at t = 0, switch goes from position 1 to 2. Find $i(t)$, given that $e(t) = e^{-t} \sin 2t$. Assume that the circuit has been study state for $t > 0$. 7 Marks



b) In the circuit shown below, find i(t) and iR(t) for t > 0. 7 Marks



(OR)

6 a) A series RL circuit with R = 100Ω and L = 0.25H has sinusoidal voltage 50 sin300t applied at t = 0. Find the expression for current. The initial current in inductor is zero. 7 Marks

b) A series RLC circuit with R = 20Ω, C = 40μF and L = 0.2H has a constant voltage 200V applied at t = 0. Find the current transients, assuming zero initial conditions. 7 Marks

UNIT-IV

7 a) Following short circuit currents and voltages are obtained experimentally for two port network: 7 Marks

i) With output short circuited **I_1=5mA, I_2=-0.3mA, V_1=25v.**

ii) With input short circuited **I_1=-5mA, I_2=10mA, V_1=30v.**

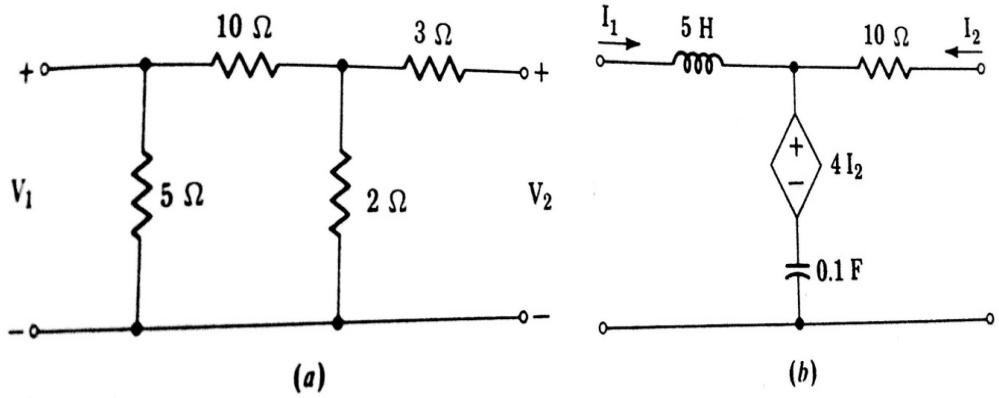
Determine Y parameters.

b) Obtain transmission parameters in terms of hybrid parameters. 7 Marks

(OR)

8 i) Find Z_{11}, Z_{12}, Z_{21} and Z_{22} for the network of figure **a.** 14 Marks

ii) Find the four open circuit impedance parameters as functions of s for the network of figure **b.**



UNIT-V

9 a) Test whether the following function is a positive real function or not 7 Marks

$F(s) = (S^3 + S^2 + 3S + 5) / (S^2 + 6S + 8)$

b) A driving point function is given by $F(s) = (S^2 + 6S + 8) / (S^2 + 4S + 3)$. 7 Marks

Find the Cauer RC and RL Forms.

(OR)

10 Synthesis the following impedance into I and II Foster forms 14 Marks

$Z(S) = 5(S^2 + 4)(S^2 + 25) / S(S^2 + 16)$.

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CODE No.:14BT40203 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

ELECTRICAL AND ELECTRONIC MEASUREMENTS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Briefly discriminate the different torque produced in the measuring instruments.	7 Marks
	b)	A basic D'Arsonval movement with a full deflection of 50 micro amps and internal resistance of 500 ohm is used as voltmeter. Formulate the necessary equation and calculate the value of multiplier resistance needed to measure a voltage range of 0-10V.	7 Marks

(OR)

2		Briefly describe the different types of errors considered in the measurements and Give the ways of their compensation.	14 Marks

UNIT-II

3	a)	Explain principle of operation of single phase energy meter with diagram.	7 Marks
	b)	Describe how single phase energy meter is tested and calibrated with the help of R.S.S watt-hour meter.	7 Marks

(OR)

4		An electrodynamometer wattmeter is use for measurement of power in single phase circuit. The load voltage is 100 V and the lad current is 9 A at lagging power factor of 0.1.The wattmeter voltage circuit has resistance of 3000Ω and an inductance of 30mH. Estimate the percentage error in the wattmeter reading when the pressure coil is connected on the supply side, and the current coil has a resistance of 0.1Ω and negligible inductance. The frequency is 50 Hz.	14 Marks

UNIT-III

5	a)	Explain, what is Phase angle error and what factors does it depend.	7 Marks
	b)	A 100/5 A Current Transformer, at its rated load of 20VA has an iron loss of 0.18W and magnetizing current of 1.4A. It is supplying rated output to ammeter having a ratio of resistance to reactance of 4. Calculate: i) Ratio error ii) Phase angle error.	7 Marks

(OR)

6	a)	Derive the equation for Nominal Ratio and Phase Angle Error in Potential Transformer.	7 Marks
	b)	Explain the construction and working of Current Transformer and draw its Phasor diagram.	7 Marks

UNIT-IV

7	a)	Draw the circuit of Schering bridge and write the formula to find unknown capacitance.	7 Marks
	b)	Draw the circuit of a Wheatstone bridge and derive the conditions for balance.	7 Marks

(OR)

8	a)	Explain how you find out the unknown resistance by using loss of charge method with suitable expressions.	7 Marks

b) Draw the circuit of a Kelvin's double bridge used for measurement of low resistances. Derive the condition for balance. 7 Marks

UNIT-V

9 a) Explain the principle and operation of D.C. Crompton's potentiometer with neat circuit diagram. 7 Marks

b) Describe briefly the working of successive approximation digital voltmeter, with the help of a block diagram. 7 Marks

(OR)

10 a) Describe the different parts of CRT. 7 Marks

b) Calculate the velocity of the electron beam in an oscilloscope if the voltage applied to its vertical deflection plates is 2000 V. Also calculate the cutoff frequency if the maximum transit time is 1/4 of a cycle. The length of horizontal plate is 50mm. 7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

TRANSFORMERS AND INDUCTION MACHINES

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Derive an *emf* equation of single phase transformer.	6 Marks
	b)	The primary and secondary windings of a 500kVA transformer have resistances of 0.42 ohm and 0.0019 ohms respectively. The primary and secondary voltages are 11kV and 415V respectively and the core loss is 2.9kW, assuming the power factor of the load to be 0.8. Calculate the efficiency on full load.	8 Marks

(OR)

2	a)	What are the various methods to reduce the leakage flux in transformer?	6 Marks
	b)	Draw the phasor diagram of a single phase transformer with load having a leading power factor and explain.	8 Marks

UNIT-II

3		220V/440V, 5KVA, 1-φ transformer has following test results. O.C Test- 220V; 1A; 70W on L.V side. S.CTest-20V; 12A; 100W on H. V side. Draw the equivalent circuit referred to L.V side, H.V side, determine efficiency and regulation at full load, and $3/4^{th}$ full load for 0.8 power factor lag.	14 Marks

(OR)

4	a)	Explain how Sumpner's test is conducted on a pair of transformers with a neat diagram.	7 Marks
	b)	Two single phase transformers with equal turns have impedance of (0.5 + j3) Ω and (0.6+j10)Ω with respect to the secondary. If they operate in parallel, determine how they will share total load of 100KW at 0.8 power factor lagging.	7 Marks

UNIT-III

5		Explain the different methods of connecting windings of three phase transformers.	14 Marks

(OR)

6	a)	Draw the phasor diagrams and winding connection of a three-phase transformer for: i) Group 1: phase displacement of zero degrees. ii) Group 2: phase displacement of 180 degrees.	7 Marks
	b)	Determine the values of Z_P, Z_s and Z_t of three winding transformer.	7 Marks

UNIT-IV

7	a)	With neat diagram explain the construction of Sq. cage Induction Motor.	6 Marks
	b)	The rotor resistance and standstill reactance of a 3 phase induction motor are 0.015 ohm and 0.09 ohm per phase respectively. i) What is the p.f. of the motor at start? ii) What is the p.f. at a slip of 4%? iii) If the number of poles is 4, the supply frequency is 50Hz and the standstill emf per rotor phase is 110V, find out the full load torque. Take full load slip as 4%.	8 Marks

(OR)

8	a)	A 3 phase induction motor is wound for four poles and is supplied from a 50Hz	7 Marks

system. Calculate:

i) the synchronous speed.

ii) the speed of the rotor when the slip is 4%.

iii) the rotor frequency when the speed of the rotor is 600 r.p.m.

b) Explain the various losses taking place in an induction motor. Also derive the relationship between rotor power input and rotor copper loss. 7 Marks

UNIT-V

9 The following test results are obtained on a 7.5 KW, 400V, 4-pole, 50Hz, 3-phase, delta connected induction motor having a stator resistance of 2.1 ohms/phase. 14 Marks

No load test: 400V, 5.5A, 410W.

Blocked-rotor test: 140V, 20A, 150W.

By constructing the circle diagram calculate the line current, power factor, torque and efficiency when the motor runs at a slip of 5%. Also find the maximum output power and maximum torques from the circle diagram.

(OR)

10 a) Explain star -delta starting method of 3 phase Induction Motor. 7 Marks

b) Explain different speed control methods on stator side of 3 phase Induction Motor. 7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

KINEMATICS OF MACHINERY

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Explain the terms: 4 Marks
i. Lower pair, ii. Higher pair, iii. Kinematic chain, iv. Inversion.

b) Sketch and explain any two inversions of a double slider crank chain. 10 Marks

(OR)

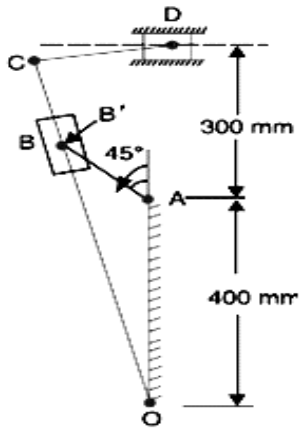
2 a) Explain Kutzbach criterion for the mobility of mechanism with a suitable example. 4 Marks

b) Define transmission angle of a four bar linkage. What is the effect of transmission angle on mechanical advantage? 4 Marks

c) Explain any two inversions of a four bar kinematic chain. 6 Marks

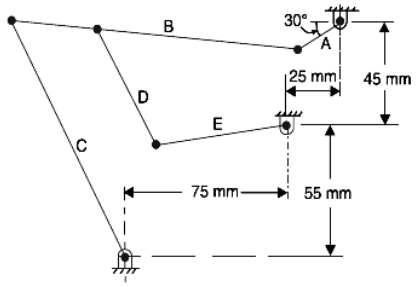
UNIT-II

3 A mechanism of a crank and slotted lever quick return motion is shown in figure. If the crank rotates counter clockwise at 120 r.p.m., determine for the configuration shown, the velocity and acceleration of the ram D. Also determine the angular acceleration of the slotted lever. Crank, AB = 150 mm; Slotted arm, OC = 700 mm and link CD = 200 mm. 14 Marks



(OR)

4 In the mechanism shown in figure, find the instantaneous centres of the links B, C and D. If the link A rotates clockwise at 10 rad/s, find the angular velocity of link E. The lengths of various links are as follows: Link A = 25 mm ; Link B = Link C = 100 mm ; Link D = Link E = 50 mm. The link D is hinged to Link B at 25 mm from the left hand end of Link B. 14 Marks



UNIT-III

5 a) Enumerate straight line mechanisms. Why are they classified into exact and approximate straight line mechanisms? 5 Marks

b) Give a neat sketch of the straight line motion 'Hart mechanism.' Prove that it produces an exact straight line motion. 9 Marks

(OR)

6 Derive an expression for the ratio of shafts velocities for Hooke's joint and draw the polar diagram depicting the salient features of driven shaft speed. 14 Marks

UNIT-IV

7 Draw the profile of a cam operating knife-edge follower from the following data: 14 Marks

i) Follower to move outward through a distance of 30 mm during 120^{o} of cam rotation.

ii) Follower to dwell for the next 60^{o} of can rotation

iii) Follower to return to its initial position during 90^{o} of cam rotation

iv) Follower to dwell for the remaining 90^{o} of cam rotation. The cam is rotating clockwise at uniform speed of 500 r.p.m. The minimum radius of the cam is 40 mm and the line of stroke of the follower is offset 15 mm from the axis of the cam and the displacement of the follower is to take place with uniform and equal acceleration and retardation on both the outward and return stroke.

(OR)

8 From the following data draw the profile of a cam in which the follower moves with simple harmonic motion during ascent while it moves with uniformly accelerated and decelerated motion during descent: Least radius of cam = 50 mm, Angle of ascent = 48^{o}, Angle of dwell between ascent and descent = 42^{o}, Angle of descent = 60^{o}, the lift of follower = 40mm, diameter of roller 20mm, distance between line of action of follower and axis of cam = 20mm. If the cam rotates at 360 r.p.m clockwise, find the maximum velocity and acceleration of the follower during descent. 14 Marks

UNIT-V

9 a) State and prove the law of gearing. 8 Marks

b) Show that the involute curves as the profiles of mating gears satisfy the law of gearing. 6 Marks

(OR)

10 A compound gear train using spur gears is required to give a total reduction ratio of 250 to 1 in four steps. The modules of the gears are 5 mm for the first step, 7 mm for the second, 10 mm for the third and 16 mm for the fourth. 14 Marks

i) Arrive at the individual speed ratios, if a tolerance of ±0.2% is allowed in the total reduction ratio.

ii) Find the numbers of teeth of all gears, if the minimum number of teeth for any pinion is 20.

iii) Find the pitch circle diameters of all gears and the centre distances.
iv) Sketch a line diagram showing the gear train.

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II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

FLUID MECHANICS AND HYDRAULIC MACHINERY

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Define the terms: density, specific volume, specific gravity, vacuum pressure. 14 Marks

(OR)

2 Differentiate between simple manometers and differential manometers. Draw neat sketches of the manometers and explain. 14 Marks

UNIT-II

3 Distinguish between; 14 Marks
i) Steady and Unsteady flow.
ii) Uniform and Non-Uniform flow.
iii) Compressible and Incompressible flow.

(OR)

4 A pipe bend tapers from a diameter of 500mm at inlet to a diameter of 250mm at outlet and the flow is turned through 75^0. The pressures at inlet and outlet are $3.5N/m^2$ and $2.5N/m^2$. If the pipe is converging oil of specific gravity 0.85, calculate the magnitude and direction of the resultant force on the bend when the oil flow rate is $0.5m^3/s$. The bend is in a horizontal plane. 14 Marks

UNIT-III

5 Describe major and minor losses in pipe flow in detail. 14 Marks

(OR)

6 a) Obtain an expression for force exerted by a jet of water on inclined (fixed and moving) flate plate in the direction of jet. 7 Marks

b) A nozzle of 50mm diameter delivers a stream of water at 20m/s perpendicular to a plate that moves away from the jet at 5m/s find; 7 Marks
i) the force on the plate ii) work done iii) the efficiency of jet.

UNIT-IV

7 a) Explain why a Pelton wheel turbine is called an Impulse turbine with a neat sketch. 7 Marks

b) A reaction turbine works at 450r.p.m. under a head of 120m. Its diameter at inlet is 1.2m and the flow area is $0.4m^2$. The angle made by absolute and relative velocities at inlet are 200 and 600 respectively with the tangential velocity. Determine: 7 Marks
i) The volume flow rate.
ii) The power developed.
iii) The hydraulic efficiency.

(OR)

8 a) Define specific speed. Give its range for different turbines. 7 Marks

b) Explain unit speed, unit discharge and unit power of a hydraulic turbine. Derive expressions for each of them. 7 Marks

UNIT-V

9 A three-stage centrifugal pump has impeller 400mm diameter and 20mm wide. The vane angle at outlet is 450 and the area occupied by the thickness of the vanes may be assumed 8% of the total area. If the pump delivers 3.6m^3/min when running at 920 r.p.m. 14 Marks

Determine:

i) Power of the pump ii) Manometeric head iii) Specific speed

(OR)

10 The bore and stroke of a double acting single cylinder reciprocating pump running at 30 r.p.m. are 200mm and 400mm respectively. The pump draws water from sump 1.2m below the pump through a suction pipe 100mm in diameter and 3.0m long. The water is delivered to a tank 28m above the pump through a delivery pipe 100mm in diameter and 38m long. Assuming the motion of the piston to be simple harmonic determine the net force due to fluid pressure on the piston when it has moved through a distance of 100mm from the inner dead centre (IDC). Take friction coefficient for both suction and delivery pipes as 0.006. Neglect size of the piston rod. 14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

THERMAL ENGINEERING - I

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) What are the important basic components of an IC engine? Explain them briefly. 7 Marks

b) Give the comparison of air-standard and fuel-air cycles. 7 Marks

(OR)

2 a) Explain briefly: 7 Marks

i) mean effective pressure. ii) specific output.
iii) specific fuel consumption. iv) calorific value of fuel.

b) What is dissociation and what is its effect on the temperature of exhaust gas mixtures? 7 Marks

UNIT-II

3 a) Describe the various factors affecting flame propagation in SI engine combustion. 7 Marks

b) Differentiate knocking process in SI and CI engines. 7 Marks

(OR)

4 Explain the various combustion chambers of SI engines with respect to swirl, squish and tumble. 14 Marks

UNIT-III

5 An eight cylinder 4-stroke engine of 10cm bore and 8cm stroke with a compression ratio of 6 is tested at 4000 r.p.m on a dynamometer of 54cm arm. During a 10 minutes test the dynamometer scale beam reading was 42kg and the engine consumed 4.4kgs of gasoline having a calorific value of 44000kJ/kg. Air at 25^{0}C and 1 bar was supplied to the carburettor at the rate of 5kg/min. Find: 14 Marks

i) brake power. ii) bmep. iii) brake specific fuel consumption.
iv) brake specific air consumption. v) brake thermal efficiency.
vi) volumetric efficiency. vii) air/fuel ratio.

(OR)

6 a) What are the different methods of finding friction power? Explain any one of them. 7 Marks

b) Explain the use of Prony brake and rope brake dynamometers in measuring the power output of an engine. 7 Marks

UNIT-IV

7 a) Distinguish the stratified engine and lean burnt engines with respect to combustion, performance and emissions with neat sketches and explain. 7 Marks

b) Discuss the suitability of using LPG/CNG in diesel engines. 7 Marks

(OR)

8 Explain the working principle of Wankel engine and discuss its merits and demerits with conventional petrol engine. 14 Marks

UNIT-V

9	a)	Discuss the relative advantages and disadvantages of Reciprocating and Centrifugal compressors.	7 Marks
	b)	Derive an expression for adiabatic efficiency of a reciprocating compressor starting from the fundamentals.	7 Marks

(OR)

10	a)	Explain the working principle of an axial flow compressor. Give its advantages and applications.	7 Marks
	b)	Discuss the effect of inter-cooling in multi-stage compressors.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

MANUFACTURING TECHNOLOGY-II

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the principle of rolling with a neat sketch and discuss about differences between Hot working and Cold working processes.	7 Marks
	b)	Explain briefly with a neat sketch the process of wire drawing.	7 Marks
		(OR)	
2	a)	Is rolling useful for making tubes? Explain your answer with proper sketches.	7 Marks
	b)	With neat sketches, explain briefly any two types of Extrusion processes.	7 Marks

UNIT-II

3	a)	Explain the following sheet metal operations. i) Shaving. ii) Nibbling. iii) Notching.	7 Marks
	b)	Differentiate between Blanking and Piercing.	7 Marks
		(OR)	
4	a)	Distinguish between Coining and Embossing.	7 Marks
	b)	Describe various shearing operations in sheet metal work.	7 Marks

UNIT-III

5		Give the complete classification of plastics and explain them in detail.	14 Marks
		(OR)	
6		With the help of suitable figures, explain the blow moulding process. Mention its applications and advantages.	14 Marks

UNIT-IV

7	a)	Explain the desired properties of abrasive materials used in AJM.	7 Marks
	b)	Explain the characteristics of water jet cutting process.	7 Marks
		(OR)	
8	a)	With the help of a neat sketch, explain how material is removed from a work piece in ultrasonic machining process.	7 Marks
	b)	Explain the various factors affecting the material removal rate in USM.	7 Marks

UNIT-V

9	a)	Compare and contrast Electro Chemical Grinding with Conventional Grinding operation.	7 Marks
	b)	Elaborate Electric Discharge Grinding with neat sketch.	7 Marks
		(OR)	
10	a)	Sketch and explain the working of wire EDM.	7 Marks
	b)	Explain the advantages of wire EDM over conventional EDM.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

ANALOG COMMUNICATIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Explain generation of AM signal using Square law modulator. Derive formula for modulation index. 8 Marks

b) An AM modulator has the output s(t) = A cos380πt + B cos360πt + B cos400πt. The carrier power is 200W and the efficiency of transmission is 20%. Determine A, B and the modulation index. 6 Marks

(OR)

2 a) Describe the detection of DSB-SC signals using coherent detection and explain what is quadrature null effect. 8 Marks

b) An AM wave $10\{1+0.6\cos 2000\pi t\}\cos 2\pi 10^6 t$ is envelope detected (ED). Find the range of time constant of ED. 6 Marks

UNIT-II

3 a) Derive the time-domain and frequency domain representation of an SSB signal. 7 Marks

b) Compare different DSB-SC, AM, SSB system in terms of power efficiency, bandwidth efficiency and receiver complexity. 7 Marks

(OR)

4 a) Explain the generation and applications of Vestigial Side band signals. 7 Marks

b) Explain the effect of frequency offset and phase offset in the demodulation of SSB signals. 7 Marks

UNIT-III

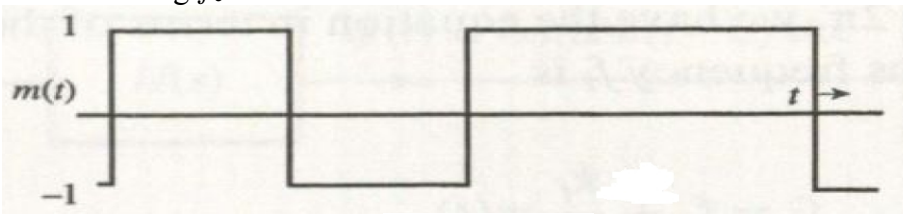
5 a) Sketch the FM and PM waveforms assuming the message signal to be a square wave. 7 Marks

b) Distinguish between angle modulation and amplitude modulation systems. 7 Marks

(OR)

6 a) Explain the generation of FM waveforms using direct and indirect method. 7 Marks

b) Sketch the FM waveforms for modulating signal m(t) given below assuming $k_f = 2\pi 10^5$ assuming f_c = 100 MHz. 7 Marks



UNIT-IV

7 a) With neat block diagram, explain the principle and operation of Super hetrodyne radio receiver and also describe receiver characteristics. 8 Marks

b) When a super heterodyne receiver is tuned to 555kHz, its local oscillator provides the mixer with an input at 1010kHz. What is the image frequency? The antenna of this receiver is connected to the mixer via tuned circuit whose loaded Q is 40. What will be the rejection ratio for the calculated image frequency? 6 Marks

(OR)

8	a)	Prove that Figure of Merit of DSB-SC and SSB are superior to that of AM.	8 Marks
	b)	Distinguish high level and low level AM transmitters. With neat block diagram, explain the principle and operation of low level AM transmitter.	6 Marks

UNIT-V

9	a)	Draw the wave forms of PAM, PPM and PWM signals for sinusoidal modulating signal.	7 Marks
	b)	Compare merits and demerits of TDM and FDM multiplexing schemes.	7 Marks

(OR)

10	a)	Describe generation and detection of PAM signals with neat schematics.	8 Marks
	b)	Discuss various applications of pulse modulation schemes.	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

ELECTRONIC CIRCUIT ANALYSIS AND DESIGN

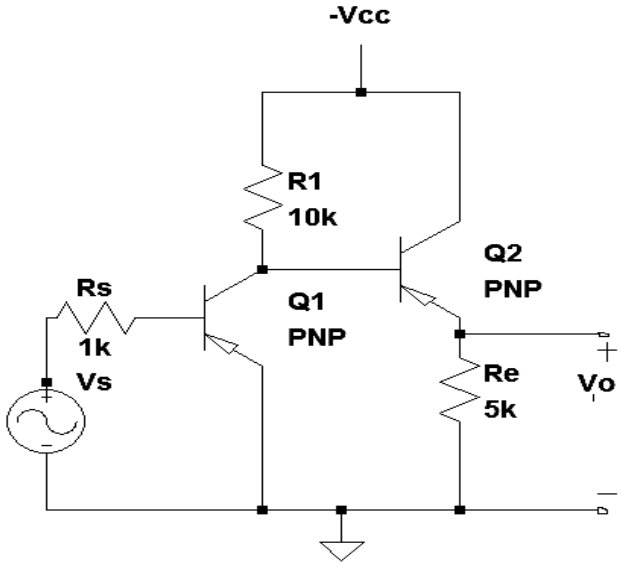
[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Find the voltage gain Avs and R_O of the amplifier shown in figure h_{ie}=1000Ω, h_{re}= 10^{-4} , h_{fe}=50, h_{oe}=10^{-4} A/V. 10 Marks



b) Write short notes on cascading of amplifiers. 4 Marks

(OR)

2 a) What is Darlington connection? Derive the current gain and input resistance. 7 Marks

b) Differentiate different types of coupling schemes used in multistage amplifiers. 7 Marks

UNIT-II

3 a) Derive the expression for voltage gain and output resistance for a common source JFET amplifier. 8 Marks

b) Explain about the effect of coupling and bypass capacitors with respect to frequency response of an amplifier. 6 Marks

(OR)

4 a) How a small-signal high frequency model is different from a low-frequency model? Explain it briefly. 6 Marks

b) Explain the following terms with respect to the frequency response of an amplifier: (i) Mid frequency region (ii) cutoff frequency (iii) Band width (iv) Low and High frequency regions. 8 Marks

UNIT-III

5 a) With a neat sketch, explain the working of RC phase shift oscillator. 6 Marks

b) Draw the circuit diagram of a voltage series feedback amplifier and derive expressions for voltage gain with and without feedback. 8 Marks

(OR)

6	a)	Explain the working of Colpitt's oscillator.	7 Marks
	b)	The distortion in an amplifier is found to be 10%. When the feedback ratio of a negative feedback amplifier is 0.06. When the feedback is removed, the distortion becomes 5%. Find the open loop gain and closed loop gain.	7 Marks

UNIT-IV

7	a)	With The help of a neat diagram, explain the operation of a complementary symmetry configured class B power amplifier.	9 Marks
	b)	Compare series fed and Transformer coupled class-A amplifier.	5 Marks

(OR)

8	a)	In a class-A amplifier V_{CE}(max) = 25V, V_{CE}(min) = 5V. Find the overall efficiency for series fed load and Transformer coupled load.	6 Marks
	b)	In series fed class-A power amplifier, explain the importance of the position of operating point on output signal swing. Show that the conversion efficiency is 25%.	8 Marks

UNIT-V

9	a)	Explain the effect of changing Q of the coil used in a tank circuit, on its band width.	7 Marks
	b)	A parallel LC circuit consists of a capacitor of 1000pF and an inductor of 100mH. The inductor has a resistance of 5Ω. Find the value of resonant frequency and the circuit impedance at resonance.	7 Marks

(OR)

10	a)	Explain briefly about the class-C tuned amplifiers.	8 Marks
	b)	A parallel resonant circuit has an inductance of 100mH and a capacitor of 100pF. Find the value of resonant frequency.	6 Marks

CODE No.:14BT40403 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

ELECTROMAGNETIC THEORY AND TRANSMISSION LINES

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	State and explain Coulomb's law.	7 Marks
	b)	Derive the boundary conditions for the tangential and normal components of electric fields at the boundary between two perfect dielectrics.	7 Marks
		(OR)	
2	a)	Deduce an expression for the capacitance of a parallel plate capacitor with two dielectrics of relative permittivities ε_1 and ε_2 respectively interposed between plates.	7 Marks
	b)	Derive Poisson's and Laplace's equations starting from Gauss's law.	7 Marks

UNIT-II

3	a)	Explain Ampere's force law.	7 Marks
	b)	Find the force per unit length on two long, straight, parallel conductors if each carries a current of 10.0A in the same direction and the separation distance is 0.20 m.	7 Marks
		(OR)	
4	a)	Derive the expression for Vector Magnetic potential.	7 Marks
	b)	Determine $\vec{J}$ at (2, π, 0) in cylindrical coordinates if the magnetic field, $\vec{H}$ is given by $\vec{H} = 5\rho \sin\phi \ \vec{az}$ mA/m².	7 Marks

UNIT-III

5	a)	What is the inconsistency in Ampere's Law? How it is rectified by Maxwell?	7 Marks
	b)	Write Maxwell's equations in integral form and differential form for time varying fields.	7 Marks
		(OR)	
6	a)	Explain the concept of displacement current.	7 Marks
	b)	State and prove electrostatic boundary conditions.	7 Marks

UNIT-IV

7	a)	Derive wave equations for source free region.	7 Marks
	b)	Explain the difference between the intrinsic impedance and the surface impedance of a conductor. Show that for a good conductor, the surface impedance is equal to the intrinsic impedance.	7 Marks
		(OR)	
8	a)	A Plane wave traveling in a free space has an average pointing vector of 5 watts/m². Find the average energy density.	7 Marks
	b)	Explain the significances of Poynting theorem and Poynting vector.	7 Marks

UNIT-V

9	a)	Explain the different types of transmission lines. What are the limitations to the maximum power that they can handle?	7 Marks

b) A lossless transmission line used in a TV receiver has a capacitance of 50 pF/m and an inductance of 200 nH/m. Find out the characteristic impedance for 10 meter long section of the line and 500 meter section at very high frequency of operation. 7 Marks

(OR)

10 a) Explain the principle of impedance matching with quarter wave transformer. 7 Marks

b) A low transmission line of 100Ω characteristic impedance is connected to a load of 400Ω. Calculate the reflection coefficient and standing wave ratio. Derive the relationships used. 7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

SIGNALS AND SYSTEMS

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Show that the product of two even signals or of two odd signals is an even signal and that the product of an even and an odd signal is an odd signal. 8 Marks

b) Find and sketch the first derivatives of the following signals: 6 Marks
i) $x(t) = u(t) - u(t-a)$, $a > 0$
ii) $x(t) = t\,[u(t) - u(t-a)]$, $a > 0$

(OR)

2 a) Compute the output y(t) for a continuous-time LTI system whose impulse response h(t) and the input x(t) are given by $h(t) = e^{-\alpha t}\,u(t)$ and $x(t) = e^{\alpha t}\,u(t)$ for $\alpha > 0$. 8 Marks

b) List the properties of Causal, Stable and LTI Systems. 6 Marks

UNIT-II

3 a) Consider full rectified sine have with peak amplitude '*I*' and time period is '***I***' expand this function in terms of exponential Fourier series. Also sketch the spectrum. 7 Marks

b) Derive the relation between Trigonometric and Exponential Fourier series coefficients. 7 Marks

(OR)

4 a) State and prove Parseval's power theorem. 7 Marks

b) Find the Fourier transform of $f(t) = \cos \pi t$; $-\frac{1}{2} \le t \le \frac{1}{2}$ and $f(t) = 0$; otherwise. 7 Marks

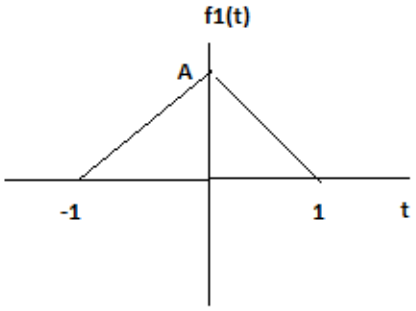
UNIT-III

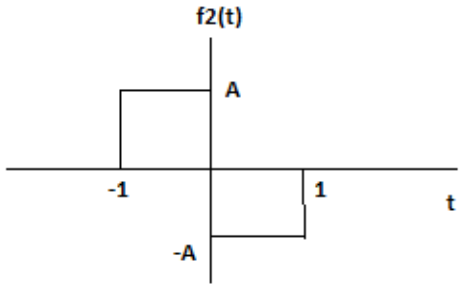
5 a) Find the auto-correlation function and the energy spectral density of the signal $x(t) = e^{-t}u(t)$. 7 Marks

b) Derive the relation between auto-correlation and power spectral density. 7 Marks

(OR)

6 a) Determine the cross correlation function of the pair of functions shown in figure. 7 Marks





b) Explain why over-sampling is resorted to in certain applications? 7 Marks

UNIT-IV

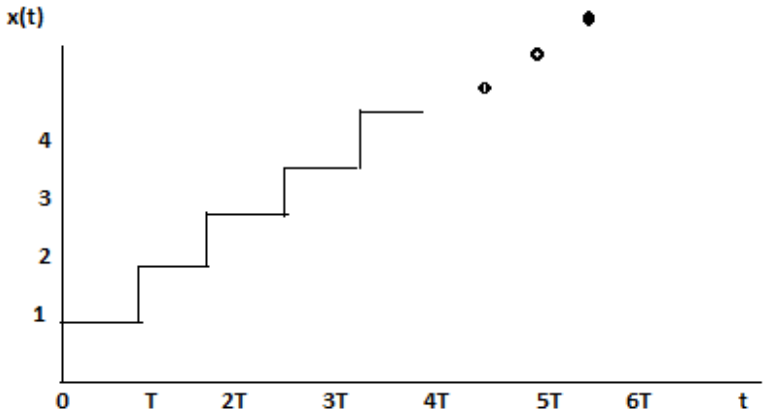
7 a) State and prove the final value theorem of Laplace transform. 7 Marks

b) Find the inverse Laplace Transform of 7 Marks

$$X(s) = \frac{-3}{(s+1)(s-1)}$$; ROC: $-2 < \sigma < 1$.

(OR)

8 a) Find the unilateral Laplace Transform of the signal shown in figure. 7 Marks



b) Determine and plot the magnitude and phase response of the discrete time differentiator given by the following difference equation. Use the normalized frequency (f / fs) for the plots. $y(n) = x(n) - x(n-1)$ 7 Marks

UNIT-V

9 a) State and prove the initial value theorem of Z transform. 7 Marks

b) Find the Z transform and its ROC of $x(n) = na^n$. 7 Marks

(OR)

10 a) A first order discrete time system is described by the difference equation 7 Marks

$$y(n) = \frac{1}{2}[x(n) + x(n-1) + y(n-1)]$$

Determine the unit sample response sequence and test for its stability.

b) Using partial fraction expansion method, determine $x(n)$, $n \geq 0$ if its unilateral 7 Marks

Z-transform $X(z)$ is given by $X(z) = \frac{z^2 + 3z}{(z - 0.5)^3}$.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

SWITCHING THEORY AND LOGIC DESIGN

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Perform the Subtraction of decimal 9137-2345 using 9's complement method. Express the result in 8421, 2421 and Excess-3 codes. 7 Marks

b) Briefly explain the Non-Weighted code binary number system. 7 Marks

(OR)

2 a) Explain basic laws of Boolean algebra with examples. 7 Marks

b) Simplify the expression **Z= AB'C' + AB'C + ABC** using Boolean laws. 7 Marks

UNIT-II

3 a) Simplify following using K map **X = A'B+A'B'C+ABC'+AB'C'** 7 Marks

b) Convert SOP to equivalent POS **A'B'C+A'BC+AB'C+ABC** 7 Marks

(OR)

4 a) Use Tabulation method to generate the set of Prime Implicants and to obtain all minimal expression for 7 Marks

$F(w, x, y, z) = \sum (0,1,4,5,6,7,9,11,15) + \sum_d (10,14)$

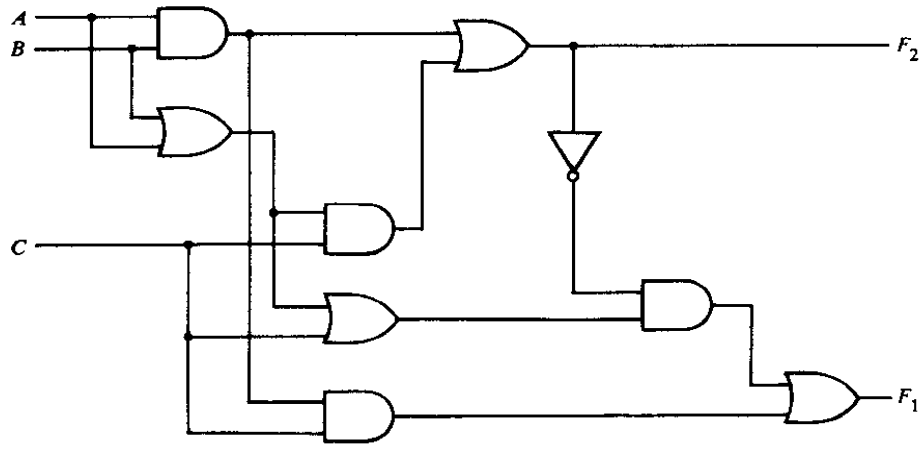
b) Draw a NAND logic diagram that implements the complement of the following function using two input NAND gate; 7 Marks

i) **F(A,B,C,D)= $\sum$ (0,1,2,3,4,8,9,12).**

ii) **(A'B+A'B') (CD'+C'D).**

UNIT-III

5 a) Analyze the below circuit, derive expression and truth table 7 Marks



b) Design a combinational circuit that generates the 9's complement of a BCD digit. 7 Marks

(OR)

6 a) Design a 4-bit combinational circuit incrementer. 8 Marks

b) Assume that the EX-OR gate has a propagation delay of 20ns and that the AND or OR gates have a propagation delay of 10ns. What is the total propagation delay time in the 4-bit adder with carry look ahead adder? 6 Marks

UNIT-IV

7	a)	Write the conversion procedures of the Flip Flops. Convert T Flip Flop to JK.	7 Marks
	b)	Draw a 4-bit parallel in serial out shift register and briefly explain.	7 Marks

(OR)

8	a)	Draw an asynchronous decade counter and explain its operation.	7 Marks
	b)	Design and explain the function of 4-bit bidirectional shift register.	7 Marks

UNIT-V

9		Explain the analysis procedure of asynchronous circuit with an illustration.	14 Marks

(OR)

10	a)	Explain the operation of debounce circuit with neat circuit diagram.	7 Marks
	b)	Find a circuit that has no static hazards and implements the Boolean function. **F(A,B,C,D) =∑(0,2,6 7,8,10,12)**	7 Marks

CODE No.:14BT40431 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

ANALOG ELECTRONIC CIRCUITS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Derive the BJT simplified hybrid model for small signal analysis.	7 Marks
	b)	Derive the CE short circuit current gain at high frequencies.	7 Marks
		(OR)	
2	a)	Draw the circuit diagram and frequency response of an RC coupled amplifier. Further explain the role of coupling and bypass capacitors.	7 Marks
	b)	Derive the current gain of a CE amplifier with resistive load at high frequencies.	7 Marks

UNIT-II

3	a)	Derive the effect of negative feedback on the input impedance in different feedback topologies.	7 Marks
	b)	Draw the circuit diagram of Op-Amp based Wein Bridge Oscillator and explain how tuning is achieved.	7 Marks
		(OR)	
4	a)	Derive the voltage gain, input impedance of voltage series feedback configuration.	7 Marks
	b)	Draw the circuit diagram of Hartley oscillator and derive the expression for the frequency of oscillations.	7 Marks

UNIT-III

5	a)	In series fed class-A power amplifier, explain the importance of the position of operating point on output signal swing. Show that the conversion efficiency is 25%.	8 Marks
	b)	Discuss the origin of various distortions in transistor amplifier circuits.	6 Marks
		(OR)	
6	a)	Derive the expression for maximum collector Power Dissipation Pc (Max) in the case of class-B power amplifiers.	6 Marks
	b)	In transformer coupled class-A power amplifier, show that the conversion efficiency is 50%.	8 Marks

UNIT-IV

7	a)	Derive the transfer function, sinusoidal and step response of a low pass RC circuit.	7 Marks
	b)	Explain the diode forward recovery time and reverse recovery time as a switch.	7 Marks
		(OR)	
8	a)	Derive the transfer function, sinusoidal and step response of a high pass RC circuit.	7 Marks
	b)	Draw the circuit diagram of a clamping circuit and explain its operation with neat waveforms.	7 Marks

UNIT-V

9 Draw the circuit diagram for Schmitt trigger and explain its operation. What are the applications of the above circuit? Derive the expressions for UTP and LTP. 14 Marks

(OR)

10 A collector coupled monostable multi using n-p-n silicon transistor has the following parameters. 14 Marks

V_{cc} = 12V, V_{BB} = 3V, R_C = 2kΩ, $R_1 = R_2 = R$ = 20kΩ, h_{FE} = 30, r_{bb} = 200Ω and c = 1000pF. Calculate and plot to scale the wave slopes at each base and collector. Also find width of the o/p pulse.

CODE No.:14BT40432 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

DATA COMMUNICATIONS

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write short notes on different network models and network topologies used for data communications.	7 Marks
	b)	Compare and contrast serial and parallel data transmission.	7 Marks
		(OR)	
2	a)	With the aid of block diagram explain in detail about digital radio system.	7 Marks
	b)	Briefly describe about ASK and PSK modulation techniques.	7 Marks

UNIT-II

3	a)	Describe about electrical and physical properties of transmission line and represent metallic transmission line with its equivalent.	7 Marks
	b)	Explain in detail about different characteristics associated with EM waves.	7 Marks
		(OR)	
4	a)	Write short notes of different modes present in optical fibers.	7 Marks
	b)	List out advantages of optical fiber cables.	7 Marks

UNIT-III

5	a)	A PCM-TDM system multiplexes 24 voice-band channels. Each sample is encoded into 7-bits and a framing bit is added to each frame. The sampling rate is 9000 samples per second. Determine the line speed in bps.	9 Marks
	b)	What is cross talk? Mention the difference between intelligent and unintelligent cross talk. List out and describe three different types of cross talk.	5 Marks
		(OR)	
6	a)	Define Pulse code modulation. Explain briefly about Pulse code modulation with suitable diagrams.	9 Marks
	b)	Define Multiplexing. Explain briefly about Time-Division Multiplexing.	5 Marks

UNIT-IV

7	a)	Explain in detail about call progress tones and signals.	7 Marks
	b)	With the aid of block diagram explain working of paging system.	7 Marks
		(OR)	
8	a)	Briefly describe about different components that make up local subscriber loop and explain its working.	7 Marks
	b)	Explain about three different cross talks that are associated with telephone and give their units.	7 Marks

UNIT-V

9	a)	Explain Cellular concept. Define Frequency Reuse mechanism and explain Cell Splitting with net sketches.	8 Marks
	b)	Write about different Hand-off mechanisms.	6 Marks
		(OR)	
10	a)	Briefly describe the following error-detection schemes: single-precision checksum, double precision checksum, Honeywell checksum, residue checksum.	9 Marks
	b)	Discuss Analog cellular system.	5 Marks

CODE No.:14BT40501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

COMPUTER ORGANIZATION

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Present a detailed note on shift micro operations and arithmetic logic shift unit.	8 Marks
	b)	With the help of example, explain IEEE standard for floating point numbers.	6 Marks
		(OR)	
2	a)	Explain the Booth's algorithm for multiplication of signed 2's complement numbers. Show the Step-by-step multiplication process using both algorithms for (-13)*(+16).	10 Marks
	b)	Convert the following decimal numbers to binary: 1231; 673 and 1998.	4 Marks

UNIT-II

3	a)	Discuss about Wilke's Micro programmed model with flow chart.	7 Marks
	b)	Discuss about the design issues of instructions and its elements in detail.	7 Marks
		(OR)	
4	a)	A computer has 32-bit instructions and 12-bit addresses. Suppose there are 250 two-address instructions. How many one-address instructions can be formulated?	7 Marks
	b)	Draw and explain the micro program sequences for a control memory.	7 Marks

UNIT-III

5	a)	Distinguish between vectored interrupts and non-vectored interrupts.	7 Marks
	b)	Discuss in detail about Direct Memory Access (DMA).	7 Marks
		(OR)	
6	a)	A 128 K byte block of data is read from a disk device. What is the overall data transmission rate if the disk drive has a latency of 4ms and a burst bandwidth of 16MB per second?	7 Marks
	b)	Write about Peripheral Component Interconnect (PCI) bus.	7 Marks

UNIT-IV

7	a)	Discuss the different mapping techniques used in cache memories and list their relative merits and demerits.	8 Marks
	b)	With the help of neat sketch, illustrate the components in a typical memory hierarchy.	6 Marks
		(OR)	
8		What do you mean by virtual memory? Discuss how paging helps in implementing virtual memory.	14 Marks

UNIT-V

9	a)	Explain the inter processor arbitration in detail.	8 Marks
	b)	How pipelining would improve the performance of CPU? Explain	6 Marks
		(OR)	
10	a)	Explain Arithmetic Pipelining processing with an example.	7 Marks
	b)	Discuss Flynn classification for Multiple Processor Organizations.	7 Marks

CODE No.:14BT40502 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

DATABASE MANAGEMENT SYSTEMS

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss the main characteristics of the database approach and specify how it differs from traditional file system.	8 Marks
	b)	Describe the concept of client/server model with a neat sketch.	6 Marks
		(OR)	
2	a)	Discuss in detail about various concepts used in ER-model.	6 Marks
	b)	With example explain about various constraints of ER model.	8 Marks

UNIT-II

3	a)	What are the integrity constraints? How are these constraints expressed in SQL?	7 Marks
	b)	What is relational algebra? State and explain various fundamental operations in it with suitable examples.	7 Marks
		(OR)	
4	a)	Write short notes on querying a relational data.	7 Marks
	b)	Discuss the selection and projection set operators.	7 Marks

UNIT-III

5	a)	By considering an example describe various data update operations in SQL.	8 Marks
	b)	List and explain the common data types available in SQL.	6 Marks
		(OR)	
6	a)	What is Functional Dependency? Explain its concept.	6 Marks
	b)	State 1NF, 2NF & 3NF and explain with examples.	8 Marks

UNIT-IV

7	a)	Why the concurrency control is needed? Explain it.	6 Marks
	b)	Explain the concept of Testing for serializability.	8 Marks
		(OR)	
8	Write short notes on:		
	a)	i) Phantom Record ii) Repeatable Read iii) Incorrect Summary iv) Dirty Read	8 Marks
	b)	Describe Wait/Die and Wound/Wait deadlock protocols.	6 Marks

UNIT-V

9	a)	Describe difference methods of defining indexes on multiple keys.	8 Marks
	b)	Explain in detail about external hashing techniques.	6 Marks
		(OR)	
10	a)	By considering example, show how to reduce access time with primary index.	7 Marks
	b)	Explain about B tree with suitable examples.	7 Marks

CODE No.:14BT40503 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

DESIGN AND ANALYSIS OF ALGORITHMS

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Solve the recurrence relation of formula 14 Marks

T (n) = g(n), n is small
T (n) = 2T (n/2) + f (n), otherwise
when
i) g(n) = O(1) and f(n) = O(n).
ii) g(n) = O(1) and f(n) = O(1).

(OR)

2 a) Explain the FIND algorithm with collapsing rule. 7 Marks

b) Describe the performance analysis in detail. 7 Marks

UNIT-II

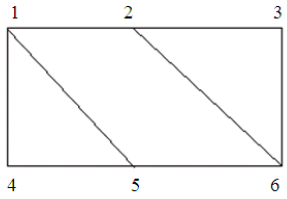
3 a) Write an algorithm for finding Bi-connected components and also analyze its time complexity. 8 Marks

b) Explain QuickSort with an example. 6 Marks

(OR)

4 a) Solve the Recurrence Relation for the merge sort time complexity. 7 Marks

b) Explain BFS algorithm and implement for the following graph. 7 Marks



UNIT-III

5 a) What is minimum cost spanning tree? What are its applications? 7 Marks

b) Implement matrix chain multiplication for the given matrices and find maximum number of operations. 7 Marks

A (20, 30) x B (30, 5) x C (5, 12) x D (12, 5)

(OR)

6 a) Implement 0/1 Knapsack problem for the following instance 8 Marks
$n = 3$, $m = 6$, ($P1$, $P2$, $P3$) = (1, 2, 5); ($W1$, $W2$, $W3$) = (2, 3, 4)

b) Write an algorithm for all pairs shortest path. 6 Marks

UNIT-IV

7 a) Compare backtracking and branch-and-bound techniques. 6 Marks

b) Describe the 4 queens problem using backtracking. 8 Marks

(OR)

8 a) Give and explain Control Abstraction for LC branch-and-bound. 4 Marks

b) Explain the principles of optimality? 4 Marks

c) Write an algorithm for FIFO branch-and-bound. 6 Marks

UNIT-V

9	a)	Write a deterministic and non deterministic algorithm for sorting a set of integers.	8 Marks
	b)	Explain the strategy to prove that a problem is NP-Hard.	6 Marks

(OR)

10		Distinguish between decision counting and optimization problem with examples. What are the steps involved in proving a problem NP-Complete.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

OBJECT ORIENTED PROGRAMMING

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write a Java Program that demonstrates the scope and life time of variables.	7 Marks
	b)	What is Access Control? Explain with suitable Java Program.	7 Marks
		(OR)	
2	a)	Explain the concept of Constructor with the help of suitable Java Program.	7 Marks
	b)	Explain the difference between a function in C Program and method in Java Program.	7 Marks

UNIT-II

3	a)	Differentiate Method Overloading and Method Overriding with the help of suitable Java Programs.	7 Marks
	b)	Explain the concept of Inheritance with the help of Base class and Sub class.	7 Marks
		(OR)	
4	a)	Explain different forms of Inheritance with examples.	7 Marks
	b)	Discuss about the benefits of Inheritance with suitable examples.	7 Marks

UNIT-III

5	a)	Explain the process of creating threads with suitable examples.	7 Marks
	b)	Write short note on synchronization of threads.	7 Marks
		(OR)	
6		What is Inter thread Communication? Write suitable Java Program that demonstrates Inter Thread Communication.	14 Marks

UNIT-IV

7	a)	Explain about Delegation Event Model.	7 Marks
	b)	Write Java program that demonstrates User Interface Components labels and buttons.	7 Marks
		(OR)	
8	a)	Explain about Scroll pane and dialogs List Panel AWTs with the help of suitable Java Program.	7 Marks
	b)	Write short note on Lay out Mangers.	7 Marks

UNIT-V

9	a)	Explain the life cycle of a Servlet and their methods in detail.	7 Marks
	b)	Write a servlet program to demonstrate parameter passing from HTML script using get method.	7 Marks
		(OR)	
10		Create a table 'book' with attributes book_no, book_title, Year_pub, cost, publisher. Establish database connectivity and design a GUI to add, delete and display entries of the table.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

COMPUTER GRAPHICS

[Computer Science and Engineering, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	List the graphical input devices. Briefly explain about any three devices.	7 Marks
	b)	Distinguish raster scan and random scan systems	7 Marks
		(OR)	
2		Illustrate the properties of ellipse which are considered in efficient generation of ellipse using midpoint method.	14 Marks

UNIT-II

3	a)	Show how reflection in the line $y = x$ and in the line $y = -x$ can be performed by a scaling operation followed by a rotation.	7 Marks
	b)	Prove that two scaling transformation are commutative that is $S_1S_2 = S_2S_1$.	7 Marks
		(OR)	
4	a)	Describe the transformation using symbolic notations that rotates an object $Q(x,y)$, θ degrees about a fixed center of rotation $P(h,k)$.	7 Marks
	b)	List the homogenous representation of all basic transformations.	7 Marks

UNIT-III

5	a)	List and describe the polygon tables representation for polygon surfaces of a 3D object with an example.	7 Marks
	b)	Discuss about the requirements of designing curves and surfaces.	7 Marks
		(OR)	
6	a)	State blending function used in B-spline curve generation. Explain the terms involved in it.	7 Marks
	b)	Discuss in detail about Hermite Spline with the sketches for Hermite blending functions.	7 Marks

UNIT-IV

7	a)	List the three basic rotation matrices for rotation about the three principle axis. Explain about their nature of operation.	7 Marks
	b)	Describe briefly about 3D Composite transformation.	7 Marks
		(OR)	
8	a)	Write the transformation matrix to rotate a point(x,y,z) about z-axis through an angle θ in the clock wise direction.	7 Marks
	b)	Write three dimensional homogenous matrix to rotate by $\boldsymbol{\pi}$ degrees about the line passing through the points (0,0,0) and (1,0,1).	7 Marks

UNIT-V

9	a)	Explain the steps involved in Z-buffer algorithm. Explain the memory requirements for the implementation of Z-buffer.	7 Marks
	b)	Discuss how the BSP-tree method is implemented for visible surface detection.	7 Marks
		(OR)	
10	a)	Compare and contrast depth buffer and depth sort method.	7 Marks
	b)	Classify the visible surface detection algorithms and explain about each class.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

CONTROL SYSTEMS

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

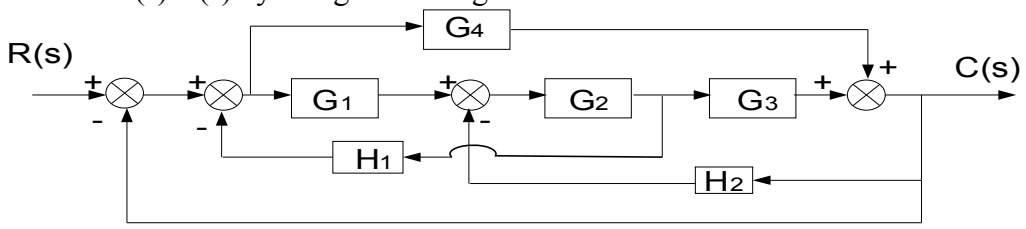
Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

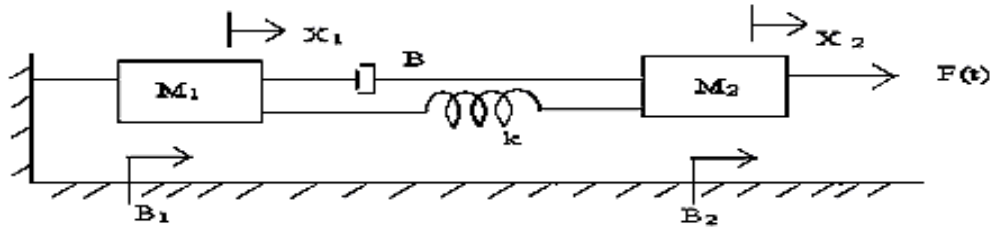
1 a) Write the advantages and disadvantages of open-loop and closed-loop control systems. 7 Marks

b) Draw the signal flow graph for the given block diagram. Obtain the transfer function C(s)/R(s) by using mason's gain formula. 7 Marks



(OR)

2 a) Determine the transfer function $\frac{X_2(S)}{F(S)}$. 7 Marks



b) Derive the transfer function of AC servomotor. 7 Marks

UNIT-II

3 a) Draw the second order system step response and indicate all time domain specifications. 6 Marks

b) A unity feedback system is characterized by the open loop transfer function G(s) = 1000(s+1)/(s+10)(s+50). Determine the steady state error for unit step, unit ramp and unit acceleration inputs. Also determine the damping ratio and natural frequency of dominant roots. 8 Marks

(OR)

4 a) Discus the effect of P, PI, PD on control system characteristics. 6 Marks

b) Find the steady state error as a function of time for the feedback system G(s) = 100/s(1+0.1s), H(s) = 5/(s+4) for the input r(t) = 1+2t+(t^2/2). 8 Marks

UNIT-III

5 a) Determine the stability of the control system with characteristics equation $s^5 + 2s^4 + 2s^3 + 4s^2 + s + 2 = 0$ using Routh Hurwitz Criterion. 7 Marks

b) Determine the range of values of K such that the characteristic equation $s^3 + 3(K + 1)\, s^2 + (7K + 5)\, s + (4K + 7) = 0$ has roots more negative than $s = -1$. 7 Marks

(OR)

6 Sketch the root locus diagram for the following open loop transfer function. 14 Marks

$\frac{K}{S(S+4)(S^2+4S+20)}$.

UNIT-IV

7 a) The forwardpath transfer function of a unity feedback system is $G(s) = \frac{K}{s(s+6)}$. 7 Marks

Find the resonant peak, resonant frequency, band width of the closed loop system for K=5.

b) Determine the gain margin and phase margin of the transfer function. 7 Marks

$G(s) = \frac{10}{s(0.5s+1)(1+0.1s)}$.

(OR)

8 Consider a unity feedback system having an open loop transfer function 14 Marks $G(S) = \frac{K}{S(1+0.5S)(1+4S)}$. Sketch the Bode plot and determine the value of '*k*' so that gain margin is 20 **db** and phase margin is 30^0.

UNIT-V

9 a) Diogonalize the system matrix $A = \begin{bmatrix} 0 & 1 & 0 \\ 3 & 0 & 2 \\ -12 & -7 & -6 \end{bmatrix}$. 7 Marks

b) Test the system represented by following equations is state controllable and observable. $[\dot{x}] = \begin{bmatrix} -2 & 0 \\ 0 & -1 \end{bmatrix} [x] + \begin{bmatrix} 3 \\ 1 \end{bmatrix} u, \quad y = [1 \quad 0] \begin{bmatrix} x_1 \\ x_2 \end{bmatrix}$. 7 Marks

(OR)

10 a) What are the properties of State Transition Matrix? 6 Marks

b) A linear time invariant system is characterized by the state equation 8 Marks $\begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 1 & 1 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} + \begin{bmatrix} 0 \\ 1 \end{bmatrix} u$, where **u** is a unit step function. Compute the solution of these equations assuming initial condition $X_0 = \begin{bmatrix} 0 \\ 1 \end{bmatrix}$.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

PULSE AND DIGITAL CIRCUITS

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Derive the condition for perfect compensation of an attenuator.	7 Marks
	b)	RC Low pass circuit with R = 5kΩ, C = 0.1μF is given a symmetrical square wave of amplitude ±10V and frequency 2kHz. What will be the amplitude of settled output voltage waveform?	7 Marks
		(OR)	
2	a)	Justify how a high pass circuit acts as a differentiator.	7 Marks
	b)	Prove that for any periodic input the average value of output of RC high pass circuit is equal to zero under steady state.	7 Marks

UNIT-II

3	a)	Explain how a sine wave may be converted into a square wave using a clipping circuit.	7 Marks
	b)	With help of a neat circuit diagram and waveforms explain the working of a positive clamping circuit.	7 Marks
		(OR)	
4	a)	Design and draw a diode clipper circuit to clip the given input voltage of **10 sin ωt** at +3Vand -5V level. Sketch the waveforms neatly.	7 Marks
	b)	State and prove clamping circuit theorem.	7 Marks

UNIT-III

5	a)	With a neat circuit diagram and relevant waveforms explain the operation of a Schmitt trigger using BJTs.	7 Marks
	b)	Design a collector coupled monostable multivibrator with the following specifications. V_{cc} = +12V, V_{bb} = -6V, h_{FEmin} = 20, V_{EBO} = 5V, I_c = 20mA. Transistors are of silicon npn type. Output pulse width = 200μsec.	7 Marks
		(OR)	
6	a)	Derive an expression for gate width of a monostable multivibrator.	7 Marks
	b)	With the help of a neat circuit diagram, explain the operation of an astable multivibrator.	7 Marks

UNIT-IV

7	a)	Design and analysis of sweep circuit using UJT.	7 Marks
	b)	An exponential sweep results when a capacitor C is through a resistor R .if the peak sweep voltages is $V_{S,}$ prove that slope error is given by e_s= Vs/V.	7 Marks
		(OR)	
8	a)	Show that how the UJT acts as a relaxations oscillator.	7 Marks
	b)	Give the applications of UJT and SCR.	7 Marks

UNIT-V

9	a)	Explain the basic principle of gates using series and shunt switch.	8 Marks
	b)	Describe FET as Chopper switch.	6 Marks
		(OR)	
10	a)	Compare different logic families in digital circuits.	8 Marks

b) Describe NOT gate operation by using transistor. 6 Marks

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CODE No.:14BT50501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

THEORY OF COMPUTATION

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Design a DFA (deterministic finite automaton) to accept the language $L_1 = \{ \alpha \in \{a, b, c\}^* \mid \alpha$ *starts and ends with the same symbol*$\}$. Only draw the transition diagram, and clearly indicate the start state and the final state(s). 14 Marks

(OR)

2 Convert the given NFA to DFA 14 Marks

	0	1
q0	{ q0, q1}	q0
q1	q2	q1
q2	q3	q3
*q3	Φ	q2

UNIT-II

3 Construct a Finite Automata for the regular expression (a+b)*abb. 14 Marks

(OR)

4 State and prove closure properties and decision algorithms of regular sets. 14 Marks

UNIT-III

5 Construct a PDA accepting the language of palindromes over the alphabet {a, b}. Prove the equivalence of acceptance by final state and empty stack in PDA. 14 Marks

(OR)

6 State and prove closure properties and decision algorithms for CFL. 14 Marks

UNIT-IV

7 Construct a Turing Machine for the language $L=\{a^n b^n c^n / n \geq 0\}$. 14 Marks

(OR)

8 Construct a Turing Machine compute multiplication with subroutine “copy”. 14 Marks

UNIT-V

9 Explain Universal Turing Machine and Show that the universal language is recursively enumerable but not recursive. 14 Marks

(OR)

10 If language L and its complement L' are both recursively enumerable then show that L and L' is recursive. 14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

OPERATING SYSTEMS

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Give a detailed description of the system structure of modern operating system	14 Marks
		(OR)	
2	a)	Briefly explain various managements of the operating systems and their responsibilities in detail.	10 Marks
	b)	What is context switching? Explain with necessary diagram.	4 Marks

UNIT-II

3	a)	Describe critical section problem. What are the requirements for the solutions of critical section problem?	7 Marks
	b)	Discuss classic problems of synchronization.	7 Marks
		(OR)	
4		What are deadlock? Explain methods for handling deadlocks.	14 Marks

UNIT-III

5		Compare the main memory organization schemes of contiguous memory allocation, pure segmentation, and pure paging with respect to the following issues: i) External fragmentation ii) Internal fragmentation iii) Ability to share code across processes	14 Marks
		(OR)	
6		Explain page replacement algorithms with suitable examples.	14 Marks

UNIT-IV

7	a)	Explain indexed allocation of files.	10 Marks
	b)	Explain directory implementation.	4 Marks
		(OR)	
8		How is disk management done by operating systems?	14 Marks

UNIT-V

9	a)	Explain in detail about Application I/O Interface.	7 Marks
	b)	Explain various steps involved in the I/O Request.	7 Marks
		(OR)	
10	a)	List the principles of protection in operating system.	7 Marks
	b)	Explain how access matrix can be used for providing protection.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

PROBABILITY AND STATISTICS

[Civil Engineering, Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Define the following. 8 Marks
i) Discrete random variable.
ii) Continuous random variable.
iii) Probability mass function.
iv) Probability density function.

b) Two dice are thrown. Let X assign to each point (a, b) in S the maximum of its numbers i.e., $X(a, b) = max(a, b)$. Find the probability distribution. Also find the mean and variance of the distribution. 6 Marks

(OR)

2 a) State and prove Baye's theorem of probability. 7 Marks

b) Of the three men, the chances that a politician, a business man or an academician will be appointed as a Vice-Chancellor (V.C.) of a University are 0.5, 0.3, 0.2 respectively. Probabilities that research in promoted by these persons if they are appointed as V.C. are 0.2, 0.7, 0.8 respectively. 7 Marks
i) Determine the probability that research is promoted.
ii) If research is promoted, what is the probability that V.C. is an academician?

UNIT-II

3 a) Fit a binomial distribution for the following data and calculate the expected frequencies. 7 Marks

x	0	1	2	3	4	5
f(x)	38	144	342	287	164	25

b) The marks obtained in statistics in a certain examination found to be normally distributed. If 15% of the students got ≥ 60 marks, 40% < 30 marks, find the mean and standard deviation. 7 Marks

(OR)

4 a) Fit a Poisson distribution for the following data and calculate the expected frequency 7 Marks

x	0	1	2	3	4
f(x)	109	65	22	3	1

b) Find the mean and standard deviation of a normal distribution in which 31% of items are under 45 and 8% are over 64. 7 Marks

UNIT-III

5 a) Explain the term statistical quality control. Discuss its aspects and advantages. 7 Marks

b) Calculate the correlation coefficient for the following heights (in inches) of fathers (X) and their sons (Y). 7 Marks

X	65	66	67	67	68	69	70	72
Y	67	68	65	68	72	72	69	71

(OR)

6 a) Draw the mean and range charts from the following data and state your conclusions. 7 Marks

Sample No	1	2	3	4	5	6	7	8	9	10
Sample mean	12.8	13.1	13.5	12.9	13.2	14.1	12.1	15.5	13.9	14.2
Sample range	2.1	3.1	3.9	2.1	1.9	3.0	2.5	2.8	2.5	2.0

b) Show that the coefficient of correlation lies between – 1 and + 1. 7 Marks

UNIT-IV

7 a) Write about i) Type 1 and Type 2 error ii) critical region and iii) right tailed test. 7 Marks

b) A population consists of five numbers 2, 3, 6, 8 and 11. Consider all possible samples of size 2 that can be drawn with replacement from the population. Determine: 7 Marks

i) the population mean.
ii) the population standard deviation.
iii) the mean of the means of sampling distribution.

(OR)

8 a) In a big city 325 men out of 600 men were found to be smokers. Does this information support the conclusion that the majority of men in this city are smokers? 7 Marks

b) In a random sample of 60 workers, the average time taken by them to get to work is 33.8 minutes with a standard deviation of 6.1 minutes. Can we reject the null hypothesis $\mu = 32.6$ minutes in favour of alternative null hypothesis $\mu > 32.6$ at $\alpha = 0.025$ level of significance? 7 Marks

UNIT-V

9 To examine the hypothesis that the husbands are more intelligent than the wives, an investigator took a sample of 10 couples and administered them a test which measures the I.Q. The results are as follows. 14 Marks

Husbands :	117	105	97	105	123	109	86	78	103	107
Wives :	106	98	87	104	116	95	90	69	108	85

Test the hypothesis with a reasonable test at the level of significance of 0.05.

(OR)

10 A pair of dice are thrown 360 times and the frequency of each sum is indicated below: 14 Marks

Sum :	2	3	4	5	6	7	8	9	10	11	12
Frequency :	8	24	35	37	44	65	51	42	26	14	14

Would you say that the dice are fair on the basis of the Chi-square test at 0.05 level of significance?

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

ELECTRICAL TECHNOLOGY

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Explain the construction and principle of working of a DC generator in detail. 14 Marks

(OR)

2 A 230V, 1000 r.p.m DC shunt motor has field resistance of 115Ω and armature circuit resistance of 0.5Ω. At no load, motor runs at 1000 r.p.m with armature current of 4A and with full field flux. 14 Marks

i) For a developed torque of 80Nm, compute armature current and speed of the motor.

ii) If it is desired that motor develops 8kW at 1250 r.p.m, determine the value of external resistance that must be inserted in series with the field winding.

Saturation and armature reaction are neglected.

UNIT-II

3 a) State and prove the condition for maximum efficiency of transformer. 7 Marks

b) A 50 kVA, 1100/220V, 50Hz transformer has an HV winding resistance of 0.125Ω and a leakage reactance of 0.625Ω. The LV winding has corresponding values of 0.005Ω and 0.025Ω respectively. Find the equivalent impedance of the transformer referred to HV and LV sides. Find the ***pu*** impedance of the transformer. 7 Marks

(OR)

4 a) Explain the equivalent circuit of transformer on No load. 7 Marks

b) A 100 kVA, single-phase transformer with ratio of 10000/200 V, 50Hz, requires 300V at the HV side to circulate full-load current with LV winding shorted, and the corresponding intake is 1000W. Calculate the percentage regulation and secondary terminal voltage on full load at 0.8 pf lagging. 7 Marks

UNIT-III

5 Derive the numerical relationship between: 14 Marks

i) line and phase currents for a balanced delta connected system.

ii) line and phase voltages for a balanced star connected system.

(OR)

6 In a star connected load each phase consists of a resistance of 50Ω in parallel with a capacitor of capacitance 16μF. When it is connected to a 400V, 3 phase, 50Hz supply. Calculate: 14 Marks

i) the line current.

ii) the power factor.

iii) power absorbed.

iv) total kVA.

UNIT-IV

7 a) Discuss the types of three phase induction motors in detail. 10 Marks

b) A three phase, 4 pole, 50 Hz induction motor is running at 1455 r.p.m. Find slip speed and slip. 4 Marks

(OR)

8	a)	Explain the classification of alternators.	7 Marks
	b)	A 4 pole, 50Hz star connected alternator has a flux per pole of 0.12Wb. It has a flux per pole of 0.12Wb. It has 4 slots per pole per phase, conductors per slot being 4. If the winding coil span is 150^0, find emf.	7 Marks

UNIT-V

9	a)	Explain why the single phase motor is not self starting.	7 Marks
	b)	Explain the construction and working principle of capacitor start motor.	7 Marks

(OR)

10	a)	Explain the construction and principle of operation of stepper motor.	7 Marks
	b)	Mention applications of single phase induction motors.	7 Marks

CODE No.:14BT40101 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

STRUCTURAL ANALYSIS - I

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Derive the expressions for finding out principal stresses, principal planes and maximum shear stress of a shaft under both B.M and Torque. 14 Marks

(OR)

2 At a point in material under stress, the intensity of the resultant stress on a certain plane is 60Mpa (Tensile) inclined at 30° to the normal of that plane. The stress on a plane at right angles to this has a normal tensile component of intensity 40Mpa (Tensile). Find: 14 Marks

i) The Principal planes and Principal stresses.
ii) The planes of maximum Shear and its magnitude.
iii) Resultant Stress on the plane on which 40MPa stress is acting.

UNIT-II

3 Find out the equations for slope and deflection of the elastic curve of a simply supported beam carrying a u.d.l of intensity 'w' per unit run. What is the maximum value of slope and deflection? 14 Marks

(OR)

4 A cantilever of span 3m is carrying a u.d.l of 10kN/m over the whole span. If the maximum bending stress is limited to 7N/mm² and maximum deflection to 15mm, find the breadth and depth of the cantilever. Take E = 2 x 10^4N/mm². 14 Marks

UNIT-III

5 A hollow cast-iron column whose outside diameter is 280mm and has a thickness of 20mm is 5.3m long and is fixed at both ends. Calculate the safe load by Rankine's formula using a factor of safety of 2.5. Find the ratio of Euler's to Rankine's loads. Take $E_{cast\ iron}$ = 107GPa and Rankine's constant = 1/1670 for both ends pinned case and the crushing strength of the material as 560MPa. 14 Marks

(OR)

6 A 4.6 m long circular column having pinned ends has 240mm external diameter and 20mm thickness. The column carries a load of 180kN at an eccentricity of 22mm from its longitudinal axis. Determine (i) stresses in the extreme fibres of the cross-section and (ii) maximum eccentricity so as to have no tension anywhere in its cross section. The modulus of elasticity of the material is 80GPa. 14 Marks

UNIT-IV

7 A fixed beam ABC carries a u.d.l of 5kN/m over the entire span and a point load of 5kN at B. If AB= BC=2 m and EI = 2000kN-m², find the fixing moments and the maximum deflection. Also draw the S.F and B.M diagrams. 14 Marks

(OR)

8 A continuous beam ABC is simply supported at A, B and C. It carries a central point load of 10kN on the span AB and a central clockwise moment of 10kN.m at midspan of BC. If AB = 4m and BC = 6m, draw the S.F and B.M diagrams. 14 Marks

UNIT-V

9 A solid circular shaft is subjected to a bending moment of 70kNm and a torque of 30kNm. Design the diameter of the shaft according to: 14 Marks

i) the Maximum Principal Stress Theory.
ii) the Maximum Shear Stress Theory.
iii) the Maximum Distortion Energy Theory.

Take Poisson's ratio = 0.29, the stress at elastic limit of the material is 255MPa and the factor of safety = 2.75.

(OR)

10 A beam of rectangular section 180mm wide and 260mm deep is used over a simply supported span of 6.6m to support two concentrated loads of 8kN each at 3m from either support. The plane of loads makes an angle of 34º with the vertical plane of symmetry. Find the direction of the neutral axis and the maximum bending stresses in the beam. 14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

FLUID MECHANICS - II

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Define displacement thickness, momentum thickness and energy thickness of a boundary layer and explain the effect of pressure gradient on boundary layer separation with a neat sketch.	14 Marks
		(OR)	
2		Find the displacement thickness, the momentum thickness and energy thickness for the velocity distribution in the boundary layer given by $\mathbf{u/U=2(y/\delta) - (y/\delta)^2}$.	14 Marks

UNIT-II

3	a)	Derive dynamic equation for gradually varied flow.	7 Marks
	b)	When does a hydraulic jump occurs? Also give its applications.	7 Marks
		(OR)	
4		Define specific energy. And explain specific energy curve.	14 Marks

UNIT-III

5		A jet of water having a velocity of 15m/s, strikes a curved vane which is moving with a velocity of 5 m/s in the same direction as that of the jet at inlet. The vane is so shaped that the jet deflected through 135^0. The diameter of jet is 100mm. Assuming the vane to be smooth, find force exerted by the jet on the vane in the direction of motion, Power exerted on the vane and Efficiency of the vane.	14 Marks
		(OR)	
6		Show that the efficiency of a free jet striking normally on a series of flat plates mounted on the periphery of a wheel can never exceed 50%.	14 Marks

UNIT-IV

7	a)	Under what headings the turbines can be classified.	7 Marks
	b)	A pelton wheel has to be designed for the following data: Power to be developed= 6000kW. Net head available = 300m; Speed = 550 r.p.m.; Ratio of jet diameter to wheel diameter = 1/10; and overall efficiency = 85%. Find the number of jets, diameter of the jet, diameter of the wheel and the quantity of water required.	7 Marks
		(OR)	
8		Give the classification of hydro power plants.	14 Marks

UNIT-V

9	a)	Water is to be pumped out of a deep well under a total head of 95m. A number of identical pumps of design speed 1000 r.p.m. and specific speed 900 r.p.m., with a rated capacity of 150 litres/second are available. How many pumps will be needed and how should they be connected.	7 Marks
	b)	When do you go for multi stage pumps?	7 Marks
		(OR)	
10	a)	What is airlift pump?	7 Marks
	b)	What is meant by priming and how do the small and large pumps are usually primed?	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

SIGNALS AND NETWORKS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) The continuous time LTI system is described by the equation $\frac{d^2y(t)}{dt^2} + 3\frac{dt(t)}{dt} + 2\ y(t) = \frac{dx(t)}{dt} + x(t)$. Find: 8 Marks

i) The impulse response of the system.
ii) The output response of the system signal for the input signal $\boldsymbol{x(t)=e^{-3t}u(t)}$.

b) Find the output response of the system described by differential equation 6 Marks

$$\frac{d^2y(t)}{dt^2} + 5\frac{dy(t)}{dt} + 6\ y(t) = x(t)$$

When the input signal $x(t)$ =cost. The initial conditions are $\frac{dy(0+)}{dt} = 1$; $y(0+)=1$

(OR)

2 a) State Dirichlet's conditions. Also state its importance. 4 Marks
b) Explain casual and anti-casual signals with suitable examples. 5 Marks
c) Derive the expression for convolution integral. 5 Marks

UNIT-II

3 a) Design a m-derived low pass filter having a design resistance R_0=500Ω ,cut-off frequency f_c=1500Hz and infinite attenuation frequency f_∞=2000Hz. 7 Marks

b) Write short notes on: 7 Marks
i) Cut-off frequency.
ii) Image impedance of a filter network.
iii) Composite filters.

(OR)

4 a) Design a constant - K low pass T and π section filters to be terminated in 600Ω having cut of frequency of 3KHz. 9 Marks

b) Discuss disadvantages of K type filters. How these can be overcome using n- derived section. 5 Marks

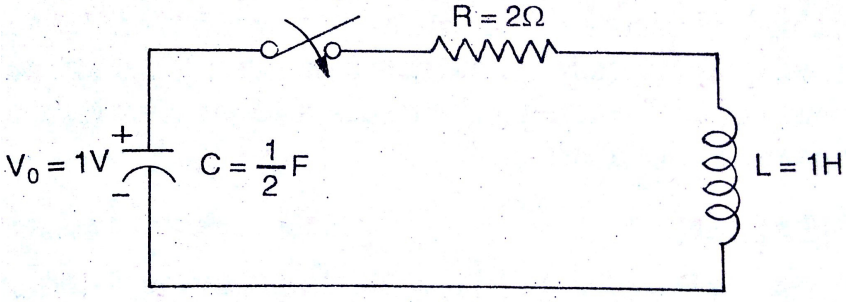
UNIT-III

5 a) Explain the term time constant for an inductive circuits. 2 Marks

b) A coil of resistance 2Ω and inductance 0.5 H is connected across a 50V **dc** supply. Calculate: 12 Marks
i) the initial rate of growth of current.
ii) the time constant.
iii) the final current.
iv) the time required for the current to reach 20A.

(OR)

6 a) For the R-L-C series circuit shown with the capacitor initially charged to a voltage V_0 as indicated in the figure. Find expression for the current in the circuit. 9 Marks

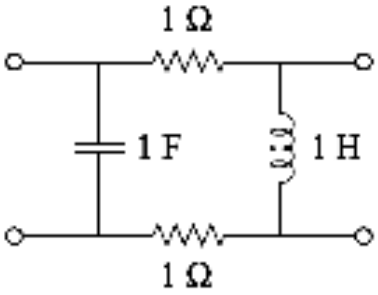


b) A capacitor of 8 μF is connected to a **dc** supply through a resistance of 1MΩ. Compute the time taken for the capacitor to reach 95% of its final value. 5 Marks

UNIT-IV

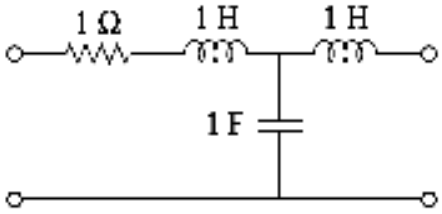
7 a) Explain inter connection of two-port network. 7 Marks

b) Find the ***y*** parameters of the two-port in Figure shown below in terms of ***s.*** 7 Marks



(OR)

8 a) Obtain the ***h*** parameters for the network in figure shown below. 7 Marks



b) Convert Y-parameters to ABCD parameters. 7 Marks

UNIT-V

9 a) How is a physical network realised by considering the driving point admittance function? Discuss. 4 Marks

b) Determine the Foster and Cauer form of realization if the driving–point Impedance function $Z(s)$ is given by $Z(s) = \dfrac{4(s^2+1)(s^2+9)}{s(s^2+4)}$ 10 Marks

(OR)

10 a) Find the R-L network corresponding to the driving point impedance using Cauer form I and Cauer form II. $Z(s) = \dfrac{(s+4)(s+8)}{(s+2)(s+6)}$ 9 Marks

b) Realize the function $F(s) = \dfrac{(s^2+1)}{s(s^2+2)}$ in Foster form I. 5 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

ELECTRICAL AND ELECTRONIC MEASUREMENTS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the significance and classification of Measurement system.	7 Marks
	b)	Explain the Dynamic characteristics of Measurement system.	7 Marks
		(OR)	
2	a)	Explain briefly various stages of the generalized measurement system.	7 Marks
	b)	Explain clearly the difference between primary, secondary and working standards.	7 Marks

UNIT-II

3	a)	Explain principle of operation of single phase energy meter with diagram.	7 Marks
	b)	Describe how single phase energy meter is tested and calibrated with the help of R.S.S watt-hour meter.	7 Marks
		(OR)	
4	a)	Classify Electrodynamometers and explain any two with suitable diagrams.	7 Marks
	b)	Explain working and constructional details of three phase Induction type energy meter.	7 Marks

UNIT-III

5	a)	Briefly describe CT and PT with diagrams.	7 Marks
	b)	Draw the equivalent circuit and phasor diagram of a current transformer and derive the expression for ratio and phase angle errors.	7 Marks
		(OR)	
6	a)	Explain the characteristics of potential transformers.	7 Marks
	b)	Draw the phasor diagram of potential transformer and explain its working with neat Sketch.	7 Marks

UNIT-IV

7	a)	Explain the loss of charge method for measurements of insulation resistance of cables.	7 Marks
	b)	Draw the circuit of Kelvin double bridge used for measurement of low resistance and Derive the condition for balance.	7 Marks
		(OR)	
8	a)	Explain the suitable bridge used for the measurement of high resistance.	7 Marks
	b)	Writ a short notes on Megger and Q-meter.	7 Marks

UNIT-V

9	a)	Explain the Horizontal Deflection Plates in an Oscilloscope.	7 Marks
	b)	Write short notes on CRO probes.	7 Marks
		(OR)	
10	a)	Explain the Lissajous Patterns for the measurement of Phase and Frequency.	8 Marks

b) List the Applications of Oscilloscopes.. 6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

TRANSFORMERS AND INDUCTION MACHINES

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Derive the EMF equation of a single phase transformer and explain the no-load condition of a single phase transformer with phasor diagram.	7 Marks
	b)	Define Voltage regulation of a transformer. Derive the approximate voltage drop equation for lagging loads.	7 Marks

(OR)

2	a)	Draw and explain the phasor diagram of a transformer for inductive and capacitive loads.	7 Marks
	b)	The efficiency of 1000KVA, 11KV/220V, 50Hz, 1-φ transformer is 98.5% at half full load at 0.8 p.f. leading and 98.8% at full load UPF. Determine; i) Iron losses. ii) Full load copper losses. iii) Find maximum efficiency KVA at UPF.	7 Marks

UNIT-II

3	a)	Write a short note on All day efficiency of the transformer.	4 Marks
	b)	Find the All day efficiency of single phase transformer having maximum efficiency of 98 % at 15 KVA at UPF and loaded as follows: 12 hours - 2 KW at 0.5 power factor lagging 6 hours - 12 KW at 0.8 power factor lagging 6 hours - no load	10 Marks

(OR)

4	a)	Explain how O.C and S.C tests are conducted on a single phase transformer with neat diagram.	7 Marks
	b)	Explain the operating principle of auto transformer and derive an expression for the saving in copper when compared to an ordinary transformer.	7 Marks

UNIT-III

5	a)	Why is third harmonics present in 3-phase transformers? Explain.	7 Marks
	b)	Explain star-delta 3-phase transformer with +30 degree connection.	7 Marks

(OR)

6	a)	Why should the tap changer be connected near the neutral? What about delta connected transformer?	7 Marks
	b)	What is the difference between no load and no load tap changer?	7 Marks

UNIT-IV

7	a)	Show that a three phase winding when excited by a three phase supply establishes a rotating magnetic field.	7 Marks
	b)	The full load power input to a 3 phase induction motor is 50Kw and the slip is 3%. Neglecting stator losses, calculate the full load Cu losses and total mechanical power developed.	7 Marks

(OR)

8 a) A 3-phase induction motor is wound for four poles and is supplied from a 50Hz system. Calculate; 7 Marks

i) the synchronous speed.

ii) the speed of the rotor when the slip is 4% .

iii) the rotor frequency when the speed of the rotor is 600 r.p.m.

b) Explain the various losses taking place in an induction motor. Also derive the relationship between rotor power input and rotor copper loss. 7 Marks

UNIT-V

9 Explain the step by step procedure to draw circle diagram of an induction motor. 14 Marks

(OR)

10 a) Explain auto transformer starting method of 3 phase induction motor. 7 Marks

b) The power input to a 3 phase induction motor is 60 KW. The stator losses are 1KW. Find the mechanical power developed and the rotor copper loss per phase if the motor is running with a slip of 3%. 7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

KINEMATICS OF MACHINERY

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define 'Machine' and 'Mechanism'. How are these different from each other? Distinguish between structure and a machine.	5 Marks
	b)	Sketch slider crank chain and its various inversions, stating actual machines in which these are used in practice.	9 Marks

(OR)

2	a)	What do you understand by degrees of freedom? For a plane mechanism derive an expression for Grubler's equation.	6 Marks
	b)	Explain in detail about double slider crank chain. Enumerate all the inversions of double slider crank mechanism.	8 Marks

UNIT-II

3		The crank and connecting rod of a horizontal steam engine are 0.5m and 2m long respectively. The crank makes 180 r.p.m. in the clockwise direction. When it has turned 45º from the inner dead centre position, determine: (i) velocity of piston. (ii) angular velocity of connecting rod. (iii) velocity of point E on the connecting rod 1.5m from the gudgeon pin.	14 Marks

(OR)

4		A link AB of four-bar linkage ABCD revolves uniformly at 120 r.pm in a clockwise direction. The link AD is fixed. Find the angular acceleration of links BC and CD. Given : AB = 75mm, BC = 175mm, CD = 150mm, DA = 100mm and angle BAD = 90^0.	14 Marks

UNIT-III

5	a)	Sketch a Paucellier mechanism. Show that it can be used to trace a straight line.	7 Marks
	b)	What is a Scott-Russel mechanism? What is its limitation? How it is modified?	7 Marks

(OR)

6	a)	What is the purpose of steering gear mechanism? Derive the condition of correct steering.	7 Marks
	b)	What is a hooke's joint? Derive an expression for the ratio of angular velocities of the shafts of a hooke's joint.	7 Marks

UNIT-IV

7	a)	Construct the displacement curve and deduce expressions for the velocity and acceleration of the follower when it moves with SHM.	7 Marks
	b)	Derive the relations for velocity and acceleration for a convex cam with a roller follower.	7 Marks

(OR)

8 Draw the profile of a cam operating a Knife-edged follower from the following data: 14 Marks

a) Follower to move outward through 40 mm during 60° of a cam rotation;
b) Follower to dwell for the next 45°
c) Follower to return its original position during next 90°
d) Follower to dwell for the rest of cam rotation.

The displacement of the follower is to take place with simple harmonic motion during both the outward and return strokes. The least radius of the cam is 50mm. If the cam rotates at 300 r.p.m., determine the maximum velocity and acceleration of the follower during the outward stroke and return stroke.

UNIT-V

9 a) Derive an expression for length of path of contact between two mating gears. 7 Marks

b) Two mating gears have 50 and 13 involute teeth of module 10mm and 20^0 pressure angle. The addendum is one module. Does the interference occur? If it occurs, to what value should the pressure angle be changed to eliminate interference? 7 Marks

(OR)

10 The arm of an epicyclic gear train rotates at 100 r.p.m in the anti-clockwise direction. The arm carries two wheels A and B having 36 and 45 teeth respectively. The wheel A is fixed and the arm rotates about the centre of wheel A. Find the speed of wheel B. What will be the speed of B, if the wheel A instead of being fixed, makes 200 r.p.m. clockwise? 14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

FLUID MECHANICS AND HYDRAULIC MACHINERY

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is the difference between gauge pressure and absolute pressure? Explain how negative gauge pressure can be measured.	7 Marks
	b)	State Newton's equation of viscosity and give examples of its application.	7 Marks
		(OR)	
2		A U-tube manometer is used to measure the pressure of water in a pipe line which is in excess of atmospheric pressure. The right limb of the manometer contains mercury and is open to atmosphere. The contact between water and mercury is in the left limb. Determine the pressure of water in the main line, if the difference in level of mercury in the limbs of U-tube is 10 cm and free surface of mercury is in level with the centre of the pipe. If the pressure of water in pipe line is reduced to 9810N/cm^2, calculate the new difference in the level of mercury. Sketch the arrangements in both cases.	14 Marks

UNIT-II

3	a)	Briefly explain the classification of flows.	7 Marks
	b)	Define the Bernoulli's equation for rotational flow mentioning the assumptions.	7 Marks
		(OR)	
4		A pipe bend tapers from a diameter of 500mm at inlet to a diameter of 250mm at outlet and the flow is turned through 75^0.The pressures at inlet and outlet are 3.5N/m^2 and 2.5N/m^2.If the pipe is converging oil of specific gravity 0.85. Calculate the magnitude and direction of the resultant force on the bend when the oil flow rate is 0.5m^3/s. The bend is in a horizontal plane.	14 Marks

UNIT-III

5	a)	Derive the Darcy-Weisbach equation for friction head loss in a pipe.	7 Marks
	b)	Water is flowing through a horizontal pipe line 1500m long an 200mm in diameter. Pressures at the two ends of the pipe lines are respectively 12kPa and 2kPa. If f = 0.015, determine the discharge through the pipe in liters per minute. Consider only frictional loss.	7 Marks
		(OR)	
6	a)	Obtain an expression for force exerted by a jet of water on fixed and moving vertical plate in the direction of jet.	7 Marks
	b)	A jet of water of diameter 75mm moving with a velocity of 25m/s strikes a fixed plate in such a way that the angle between the jet and plate is 60°. Find the force exerted by the jet on the plate; i) in the direction normal to the plate. ii) in the direction of jet.	7 Marks

UNIT-IV

7	a)	Explain why a Pelton wheel turbine is called an Impulse turbine with a neat sketch.	7 Marks
	b)	A reaction turbine works at 450 r.p.m. under a head of 120m. Its diameter at inlet is 1.2m and the flow area is $0.4m^2$. The angles made by absolute and relative velocities at inlet are 200 and 600 respectively, with the tangential velocity. Determine; i) volume flow rate. ii) power developed. iii) hydraulic efficiency.	7 Marks

(OR)

8	a)	Define specific speed. Give its range for different turbines.	7 Marks
	b)	Explain unit speed, unit discharge and unit power of a hydraulic turbine. Derive expressions for each of them.	7 Marks

UNIT-V

9	What is an indicator diagram of a reciprocating pump?	14 Marks

(OR)

10	Discuss about pumped storage plants in detail.	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

THERMAL ENGINEERING - I

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the important basic components of an IC engine? Explain them briefly.	7 Marks
	b)	Give the comparison of air-standard and fuel-air cycles.	7 Marks
		(OR)	
2	a)	What are time loss factors in an engine? Discuss in detail.	7 Marks
	b)	Compare the actual fuel air cycle to that of an ideal standard air fuel cycle with neat sketches and explain the reasons for their difference of an Otto cycle.	7 Marks

UNIT-II

3	a)	S.I. engine knock is primarily a problem at wide-open throttle and lower engine speeds. Explain why this is the case.	7 Marks
	b)	Explain the various stages of combustion in C.I. engine with neat sketch.	7 Marks
		(OR)	
4	a)	What do you mean by pre ignition? How it is detected?	7 Marks
	b)	Discuss the various methods of charge stratification with neat sketches.	7 Marks

UNIT-III

5		A four-stroke cycle gas engine has a bore of 20cm and a stroke of 40cm. The compression ratio is 8. In a test on the engine the indicated mean effective pressure is 5 bar, the air to gas ratio is 5:1 and the calorific value of the gas is 12kJ/m^3 at NTP. At the beginning of the compression stroke the temperature is 75^{0}C and the pressure is 1 bar. Neglecting residual gases, determine the indicated power, thermal efficiency and the relative efficiency of the engine at 225 r.p.m.	14 Marks
		(OR)	
6	a)	What is the use of a dynamometer? Explain any one of the dynamometers with the help of a neat diagram.	7 Marks
	b)	Name different methods of measurement of fuel consumption in an engine and explain any one of them in detail.	7 Marks

UNIT-IV

7	a)	Discuss the various methods of charge stratification with neat sketches and explain its advantage with respect to S.I. engine.	7 Marks
	b)	Discuss in detail the CRDI system with a neat sketch.	7 Marks
		(OR)	
8		HCCI is one of the possible techniques for future emission norms in I.C. engines. But in practice it has to overcome lot of obstacles. Discuss in detail.	14 Marks

UNIT-V

9	a)	Discuss the relative advantages and disadvantages of Reciprocating and Centrifugal compressors.	7 Marks
	b)	Derive an expression for adiabatic efficiency of a reciprocating compressor starting from the fundamentals.	7 Marks

(OR)

10	a)	Explain the working principle of an axial flow compressor. Give its advantages and applications.	7 Marks
	b)	Discuss the effect of inter-cooling in multi-stage compressors.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

MANUFACTURING TECHNOLOGY-II

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is the significance of recrystallization temperature in metal working?	7 Marks
	b)	What do you understand by the terms? i) Ingot. ii) Slab. iii) Billet.	7 Marks
		(OR)	
2	a)	Distinguish between wire drawing and tube drawing with neat sketches.	7 Marks
	b)	Sketch and explain any three examples of rolling stand arrangements.	7 Marks

UNIT-II

3	a)	Describe various types of bending processes in sheet metal.	7 Marks
	b)	What is the difference between blanking and piercing? What do you give clearance for blanking and piercing?	7 Marks
		(OR)	
4	a)	Distinguish between coining and embossing.	7 Marks
	b)	Describe various shearing operations in sheet metal work.	7 Marks

UNIT-III

5		Describe the process of Extrusion of plastics with a neat diagram. Name some products made by this process.	14 Marks
		(OR)	
6		Write a short notes on: (i) Thermoforming. (ii) Blow Moulding.	14 Marks

UNIT-IV

7		With a neat sketch, explain the working principle of Ultrasonic Machining process and different elements in it. What are the advantages, limitations of this process?	14 Marks
		(OR)	
8		Illustrate the mechanism involved in abrasive jet machining with a neat sketch and its applications.	14 Marks

UNIT-V

9	a)	Compare and contrast Electro Chemical Grinding with Conventional Grinding operation.	7 Marks
	b)	Elaborate Electric Discharge Grinding with neat sketch.	7 Marks
		(OR)	
10	a)	Sketch and explain the working of wire EDM.	7 Marks
	b)	Explain the advantages of wire EDM over conventional EDM.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

ANALOG COMMUNICATIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Define Amplitude modulation. Present the time domain and frequency domain mathematical expressions for baseband, unmodulated carrier and amplitude modulated signals with neat diagrams. 7 Marks

b) Derive the power and bandwidth of an amplitude modulated wave assuming $m(t)=m\cos(2\pi f_m t)$. Also compute the power efficiency of an AM wave. 7 Marks

(OR)

2 a) Explain the generation of AM waves using square law modulator and switching modulators. 7 Marks

b) Give the time-domain and frequency domain description of DSB-SC signals with neat diagrams. Further mention the advantage of DSB-SC over AM. 7 Marks

UNIT-II

3 a) Derive the time-domain and frequency domain representation of an SSB signal. 7 Marks

b) Compare different DSB-SC, AM, SSB system in terms of power efficiency, bandwidth efficiency and receiver complexity. 7 Marks

(OR)

4 a) Explain the generation and applications of Vestigial Side band signals. 7 Marks

b) Explain the effect of frequency offset and phase offset in the demodulation of SSB signals. 7 Marks

UNIT-III

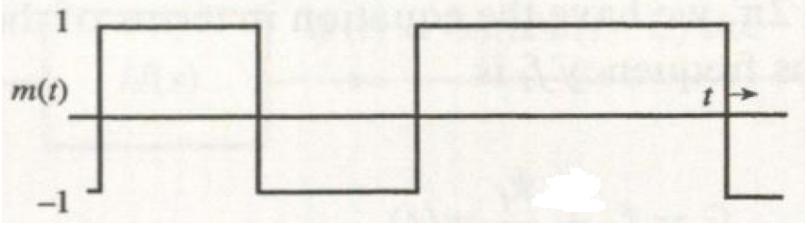
5 a) Write down the mathematical description of phase modulated and frequency modulated signals. Further explain the generation of FM signal using phase modulator. 7 Marks

b) Describe the Indirect (Armstrong) method of generating FM waves. 7 Marks

(OR)

6 a) Explain the demodulation of FM waveforms with a neat diagram. 7 Marks

b) Sketch the FM and PM waveforms for modulating signal m(t) given below assuming $k_f = 2\pi 10^5$ and $k_p = 2\pi$ assuming $f_c = 100\text{MHz}$. 7 Marks



UNIT-IV

7 a) Distinguish high level and low level AM transmitters. With neat block diagram, explain the principle and operation of high level AM transmitter. 7 Marks

b) With the block diagram, explain the principle and operation of super heterodyne receiver. Also discuss the criterion for selection of RF amplifier and IF 7 Marks

frequency.

(OR)

8	a)	Illustrate the common scheme to study the noise performance of analog modulation systems.	7 Marks
	b)	Discuss Selectivity, Sensitivity, Noise margin and Fidelity of Radio receiver.	7 Marks

UNIT-V

9	a)	Explain the need and operation of frequency division multiplexing with a neat diagram.	7 Marks
	b)	Describe the generation and demodulation of PAM signals.	7 Marks

(OR)

10	a)	Distinguish between PAM, PWM and PPM signals with neat diagrams.	7 Marks
	b)	Describe the sampling and quantization of analog signals with neat diagrams.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

ELECTRONIC CIRCUIT ANALYSIS AND DESIGN

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What do you mean by a multistage amplifier? Explain it briefly.	6 Marks
	b)	Draw the circuit diagram of a Darlington emitter follower and derive the expressions for its voltage gain and input resistance.	8 Marks
		(OR)	
2	a)	State the various methods of cascading transistor amplifiers.	7 Marks
	b)	With the help of a suitable circuit diagram, explain the working of a RC coupled amplifier.	7 Marks

UNIT-II

3		In a single stage RC coupled CE amplifier, explain the effect of bypass and coupling capacitor on frequency response with necessary analysis.	14 Marks
		(OR)	
4	a)	Sketch the circuit of a CS amplifier. Derive the expression for A_V at low frequencies. What is the maximum value of A_V?	7 Marks
	b)	Analyze the performance of common drain FET amplifier at high frequencies.	7 Marks

UNIT-III

5	a)	Explain and justify the effect of Negative feedback on the characteristics of an amplifier.	8 Marks
	b)	An amplifier with open loop gain of 2000 ± 150 is available. It is necessary to have the amplifier whose voltage gain varies by not more than ± 0.2%. Calculate the feedback factor β and gain of the amplifier with feedback.	6 Marks
		(OR)	
6	a)	Derive the expression for the frequency of oscillations of a BJT-RC Phase shift oscillator.	8 Marks
	b)	Find C and h_{fe} of a transistor to provide f_0 of 50 KHz of a RC transistorised phase shift oscillator given, R_1=22 KΩ, R_2=68 KΩ, R_C=20 KΩ, R_E =6.8KΩ.	6 Marks

UNIT-IV

7	a)	What is harmonic distortion? How does it arise in Class B-operation? And, how can it be corrected in push-pull circuit?	8 Marks
	b)	Briefly explain the difference between transformer-coupled and complementary symmetry class B push-pull amplifiers.	6 Marks
		(OR)	
8		Explain the following:	14 Marks
		(i) Thermal stability and heat sinks.	
		(ii) Transistor power consumption.	
		(iii) Distortion in power amplifiers.	

UNIT-V

9	a)	What is a tuned voltage amplifier? Explain it briefly.	6 Marks
	b)	A parallel resonant circuit has a band width of 15KHz and Q-factor of 120. What is the resonant frequency of the circuit?	8 Marks

(OR)

10	a)	Explain the working of a double-tuned amplifier.	7 Marks
	b)	Explain in brief, the function of the tank circuit in a tuned-voltage amplifier.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

ELECTROMAGNETIC THEORY AND TRANSMISSION LINES

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss the salient features and applications of Gauss's law.	7 Marks
	b)	Derive the expression for electric field due to volume charge density.	7 Marks
		(OR)	
2	a)	Define electric potential and give the relation between E and V.	7 Marks
	b)	Explain the following terms: i) Homogeneous and isotropic medium. ii) Line, surface and volume charge distributions.	7 Marks

UNIT-II

3	a)	Prove that isolated magnetic charge does not exist.	7 Marks
	b)	Derive the expression for force between two current elements.	7 Marks
		(OR)	
4	a)	Distinguish between scalar and vector magnetic potential.	7 Marks
	b)	Explain about magnetic energy.	7 Marks

UNIT-III

5	a)	Derive boundary conditions of electric field and magnetic fields for dielectric-dielectric interface.	7 Marks
	b)	State Ampere's circuital law. Specify the conditions to be met for determining magnetic field strength, H based on Ampere's circuital law.	7 Marks
		(OR)	
6	a)	Explain the concept of displacement current which was introduced by Maxwell for the generation of Magnetic fields in space.	7 Marks
	b)	Given $\vec{E} = 10\sin(wt - \beta z)\,\vec{ay}\,V/m$ in free space, determine $\vec{D}, \vec{B}$ and $\vec{H}$.	7 Marks

UNIT-IV

7	a)	Derive wave equations for a conducting medium.	7 Marks
	b)	Derive the propagation characterization of electromagnetic waves in free space.	7 Marks
		(OR)	
8	a)	Derive expression for reflection and transmission coefficients of an EM wave when it is incident normally on a dielectric.	7 Marks
	b)	Explain the significances of Poynting theorem and Poynting vector.	7 Marks

UNIT-V

9	a)	Derive the equation for the input impedance of a transmission line.	7 Marks
	b)	Write short notes on reflection coefficient, standing wave ratio and transmission coefficient.	7 Marks
		(OR)	
10	a)	Derive the characteristics impedance of a transmission line in terms of its line constants.	7 Marks

b) Sketch the voltage and current distribution along matched, open and short circuited transmission line. 7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

SIGNALS AND SYSTEMS

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Explain the concept of Unit Impulse and Unit Step functions. 6 Marks

b) Explain how the signals and systems are classified. 8 Marks

(OR)

2 a) Define LTI system. Write the properties of the LTI system. 7 Marks

b) Find convolution of two signals 7 Marks

x(t) = 1, 0 < t < T and h(t) = t, 0 < t < 2T

= 0, otherwise = 0, otherwise

UNIT-II

3 a) Consider full rectified sine have with peak amplitude '1' and time period is '1' expand this function in terms of exponential Fourier series. Also sketch the spectrum. 7 Marks

b) Derive the relation between Trigonometric and Exponential Fourier series coefficients. 7 Marks

(OR)

4 a) Find the Fourier transform of the Gaussian pulse given by $x(t) = \frac{1}{\sqrt{2\pi}} e^{-t^2/2}$ 7 Marks

b) Prove that if $f(t) \leftrightarrow F(w)$ then $f(t + T) + f(t - T) \leftrightarrow 2 \cos(wT)F(w)$. 7 Marks

UNIT-III

5 a) Find the auto-correlation of the signal $x(t) = A \cos(w_o t + \theta)$. 7 Marks

b) Write all the properties of power spectral density. 7 Marks

(OR)

6 a) What is sampling? Explain the need for sampling and clearly discuss the process of sampling low pass signals and derive conditions for optimum reconstruction of signal. 8 Marks

b) What is aliasing? Explain its effect on sampling. 6 Marks

UNIT-IV

7 a) Derive the relation between Laplace transform and Fourier transform of signal. 7 Marks

b) Find the initial and final values of signal $X(t)$ whose Laplace transform is $X(s) = (7s + 10) / [s(s + 2)]$. 7 Marks

(OR)

8 a) Describe the ROC of the signal $x(t) = e^{-b|t|}$ For $b > 0$ and $b \leq 0$ 7 Marks

b) Find the inverse Laplace transform of $X(s) = (-5s-7) / (s+1)(s-1)(s+2)$ 7 Marks

UNIT-V

9 a) State and prove the final value theorem of Z-transform. 7 Marks

b) Determine the Z-transform and its ROC for the signal: 7 Marks

$$x(n) = (1/5)^n\, u(-n).$$

(OR)

10 a) For the system with $H(z) = \dfrac{z(z - 0.5)}{z^2 - z + 0.1875}$, with determine and plot its magnitude and phase responses. 7 Marks

b) Using partial fraction expansion method, determine $x(n)$, $n \geq 0$ if its unilateral Z-transform, $X(z)$ is given by $X(z) = \dfrac{1}{(z+1)^2(z - 0.5)}$. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

SWITCHING THEORY AND LOGIC DESIGN

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Perform the subtraction of decimal 9137-2345 using 9's complement method. Express the result in 8421, 2421 and Excess-3 codes.	7 Marks
	b)	Briefly explain the Non-weighted code binary number system.	7 Marks
		(OR)	
2	a)	Explain basic laws of Boolean algebra with examples.	7 Marks
	b)	Simplify the expression Z= AB'C' + AB'C + ABC using Boolean laws.	7 Marks

UNIT-II

3		Simplify the following Boolean functions using K-Maps: i) $f(A,B,C,D) = A'C + A'B + AB'C + BC$ ii) $f(A,B,C,D) = \prod_M (4,5,6,7,8,12) \prod_d (1,2,3,9,11,14)$	14 Marks
		(OR)	
4		Simplify the logic function using Quine McClasky method: F(A, B, C, D) = Σm (0, 1, 3, 7, 8, 9, 11, 15)	14 Marks

UNIT-III

5	a)	Design a BCD to excess-3 code converter.	8 Marks
	b)	Explain the operation of 4-bit carry look ahead adder.	6 Marks
		(OR)	
6	a)	Design a code converter that converts a decimal digit from BCD to 8 4 -2 -1 code.	8 Marks
	b)	Construct a 4 to 16 line decoder with five 2 to 4 line decoders with enable.	6 Marks

UNIT-IV

7	a)	Explain the operation of the following flip-flops with truth table: i) D flip-flop ii) T flip-flop	6 Marks
	b)	Explain the operation of a 3-bit synchronous up counter with necessary diagrams.	8 Marks
		(OR)	
8	a)	Explain the operation of parallel shift register with parallel load using neat logic diagram.	7 Marks
	b)	Explain universal counter with neat diagram.	7 Marks

UNIT-V

9	a)	Describe the design procedure for asynchronous sequential circuits.	6 Marks
	b)	Find a circuit that has no static hazards and the Boolean function. F(A, B, C, D) = ∑m(1, 3, 5, 7, 8, 9, 14, 15)	8 Marks
		(OR)	
10	a)	What are the different types of hazards in asynchronous sequential circuits?	7 Marks
	b)	Write the differences between PAL, PLA and PROM.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

ANALOG ELECTRONIC CIRCUITS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Derive the expressions for Ai, AV of CE amplifier circuit. Explain how Ai and AV are affected by RL.	8 Marks
	b)	Explain the significance of Miller's theorem in transistor circuit analysis.	6 Marks
		(OR)	
2	a)	Draw the small signal equivalent circuit for an emitter follower stage at high frequencies.	8 Marks
	b)	Explain the significance of Miller's theorem in transistor circuit analysis.	6 Marks

UNIT-II

3	a)	Show that the gain of Wien bridge oscillator using BJT amplifier must be at least 3 for the oscillations to occur.	10 Marks
	b)	Explain the concept of feedback in oscillators.	4 Marks
		(OR)	
4	a)	Draw the circuit diagram of a RC phases shift oscillator using BJT. Derive the expression for frequency of oscillators.	10 Marks
	b)	Discuss the factors that affect the frequency stability of an oscillator.	4 Marks

UNIT-III

5	a)	Define conversion efficiency and derive the maximum efficiency of a Class-A large signal amplifier.	7 Marks
	b)	Describe the higher order harmonic distortion in power amplifiers.	7 Marks
		(OR)	
6	a)	Explain the operation of a class-B push-pull amplifier with neat diagrams.	7 Marks
	b)	Distinguish between Class-A, Class-B and Class-AB amplifiers with neat diagrams.	7 Marks

UNIT-IV

7		Explain the following. i) Storage and transition times of the diode as a switch. ii) Switching times of the transistor.	14 Marks
		(OR)	
8	a)	Derive the transfer function, sinusoidal and step response of a high pass RC circuit.	7 Marks
	b)	Draw the circuit diagram of a clamping circuit and explain its operation with neat waveforms.	7 Marks

UNIT-V

9	a)	Explain the working of a Bistable multivibrator circuit with the help of neat waveforms. What are its applications?	8 Marks
	b)	Derive an expression for the period of oscillations of astable multivibrator.	6 Marks
		(OR)	
10	a)	Distinguish between bistable, monostable and astable multi-vibrators and mention their applications.	7 Marks
	b)	Draw the circuit diagram of a bistable multi-vibrator realized with BJTs and explain its operation.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

COMPUTER ORGANIZATION

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Define computer. Specify the different types of computers and their characteristics. 8 Marks

b) Determine the base of the numbers in each case for the following operations to be correct: 6 Marks

i) 14/2 = 5
ii) 54/4 = 13
iii) 24 +17 = 40

(OR)

2 a) Briefly explain the binary multiplication and division algorithm**.** 10 Marks

b) Formulate a weighted binary code for the decimal digits using weights 6, 3, 1, 1. 4 Marks

UNIT-II

3 Draw and explain the block diagram for micro programmed control unit and also explain its operations. 14 Marks

(OR)

4 a) Write down the organization of typical hardwired control unit and explain the functions performed by the various blocks. 10 Marks

b) Write short notes on addressing sequence. 4 Marks

UNIT-III

5 a) What is the importance of I/O interface? In a computer system, why a PCI bus is used? With a neat sketch, explain how the read operation is performed, along with the role of IRDY# / TRDY# on the PCI bus. 8 Marks

b) Give brief description on the serial communications. 6 Marks

(OR)

6 What do you mean by initialization of DMA controller? How DMA Controller works? Why does DMA have priority over the CPU when both request a memory transfer? 14 Marks

UNIT-IV

7 The access time of a cache memory is 100 ns and that of main memory is 1000 ns. It is estimated that 80% of the memory requests are for read and the remaining 20% are for write. The hit ratio for read accesses only is 0.9. A write-through procedure is used. 14 Marks

i) What is the average access time of the system considering only memory read cycle?
ii) What is the average access time of the system for both read and write requests?

(OR)

8		With the help of a neat diagram, explain the match logic for one word of associative memory.	14 Marks

UNIT-V

9	a)	With a neat diagram, explain the pipeline for floating-point addition and subtraction.	8 Marks
	b)	List and explain the characteristics of multiprocessors.	6 Marks

(OR)

10	a)	A non-pipeline system takes 50 ns to process a task. The same task can be processed in a six-segment pipeline with a clock cycle of 10 ns. Determine the speedup ratio of the pipeline for 100 tasks. What is the maximum speed up that can be achieved?	8 Marks
	b)	What are the reasons of pipeline conflicts in pipelined processor? Discuss the various conflicts that might arise in a pipeline. How are they resolved?	6 Marks

CODE No.:14BT40502 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

DATABASE MANAGEMENT SYSTEMS

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the purpose of database system.	7 Marks
	b)	Write about the structure of database system architecture with neat sketch.	7 Marks
		(OR)	
2	a)	Differentiate between relationships and relationship sets.	7 Marks
	b)	Discuss about ER-diagrams.	7 Marks

UNIT-II

3	a)	Describe the properties of a relation.	6 Marks
	b)	What is a view? How views are implemented?	8 Marks
		(OR)	
4	a)	Explain about any four relational algebra operations with examples.	8 Marks
	b)	Differentiate DRC and TRC.	6 Marks

UNIT-III

5	a)	What is a group function? List and explain how to use group functions in SQL with appropriate examples.	8 Marks
	b)	Explain the structure of SQL SELECT statement with suitable example.	6 Marks
		(OR)	
6	a)	What is meant by the closure of functional dependencies? Illustrate with example.	6 Marks
	b)	What is normalization? Explain in detail about various normal forms.	8 Marks

UNIT-IV

7		What is lock based protocols? Explain them in detail.	14 Marks
		(OR)	
8	a)	Discuss about two phase commit protocol.	6 Marks
	b)	Illustrate dead lock and conflict serializability with suitable example.	8 Marks

UNIT-V

9	a)	What is an index structure? Explain how to use hash table as an index structure for a database.	8 Marks
	b)	When does a collision occur in hashing? Illustrate various collision resolutions techniques.	6 Marks
		(OR)	
10	a)	Discuss in detail about primary file organization.	7 Marks
	b)	By considering relevant example, show insertion and deletion operations on a B-Tree.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

OBJECT ORIENTED PROGRAMMING

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the different data types and their ranges in Java?	7 Marks
	b)	Write a Java program to find the biggest number present in the given array of ***n*** numbers.	7 Marks
		(OR)	
2	a)	Explain the OOP paradigm.	7 Marks
	b)	Write a Java program to accept five command line arguments and perform sorting in increasing order and display them.	7 Marks

UNIT-II

3	a)	Explain about various Member Access Rules.	7 Marks
	b)	Discuss about the importance of Packages.	7 Marks
		(OR)	
4	a)	What is an Interface? Explain the process of implementing an Interface with suitable Java Code.	7 Marks
	b)	How does the Interfaces are extended? Explain with suitable program.	7 Marks

UNIT-III

5	a)	Explain the process of creating threads with suitable examples.	7 Marks
	b)	Write short note on synchronization of threads.	7 Marks
		(OR)	
6		What is Inter thread Communication? Write suitable Java Program that demonstrates Inter Thread Communication.	14 Marks

UNIT-IV

7	a)	Explain the life cycle of an Applet.	7 Marks
	b)	Write a Java program using Applets to display the cursor position by handling mouse events.	7 Marks
		(OR)	
8	a)	Explain the two ways of executing an Applet.	7 Marks
	b)	Design an Applet to play and stop music files.	7 Marks

UNIT-V

9	a)	Explain the life cycle of a Servlet and their methods in detail.	7 Marks
	b)	Write a Servlet program to demonstrate parameter passing from HTML script using get method.	7 Marks
		(OR)	
10		Create a table 'book' with attributes book_no, book_title, Year_pub, cost, publisher. Establish database connectivity and design a GUI to add, delete and display entries of the table.	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

COMPUTER GRAPHICS

[Computer Science and Engineering, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	List the graphical input devices. Briefly explain about any three devices.	7 Marks
	b)	Distinguish raster scan and random scan systems	7 Marks
		(OR)	
2	a)	Explain in detail about the Raster Scan System.	7 Marks
	b)	Explain in detail about the Ellipse generation algorithm.	7 Marks

UNIT-II

3	a)	What is meant by homogenous coordinate? What is its significance?	7 Marks
	b)	Rotate the point P(-2,4) about the origin 30^0 in anti clock wise direction.	7 Marks
		(OR)	
4	a)	Explain the working of the Suther-Hodgeman algorithm for polygon clipping with the help of suitable example.	7 Marks
	b)	Derive the window to view port transformation.	7 Marks

UNIT-III

5	a)	List and describe the polygon tables representation for polygon surfaces of a 3D object with an example.	7 Marks
	b)	Discuss about the requirements of designing curves and surfaces.	7 Marks
		(OR)	
6	a)	Give a detailed note about Hermite interpolation.	7 Marks
	b)	What are the elements of geometry vector proposed by Bezier for curve generation?	7 Marks

UNIT-IV

7		Explain in detail about: i) Parallel Projections. ii) Perspective projections.	14 Marks
		(OR)	
8		Explain in detail about: i) Rotations with Quaternions. ii) Reflections and shear Transformations.	14 Marks

UNIT-V

9	a)	Explain the procedure followed for back face detection.	7 Marks
	b)	Outline the z-buffer algorithm. List the advantages and disadvantages of the z-buffer algorithm.	7 Marks
		(OR)	
10		Explain about the Area subdivision method and Shading methods.	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

CONTROL SYSTEMS

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

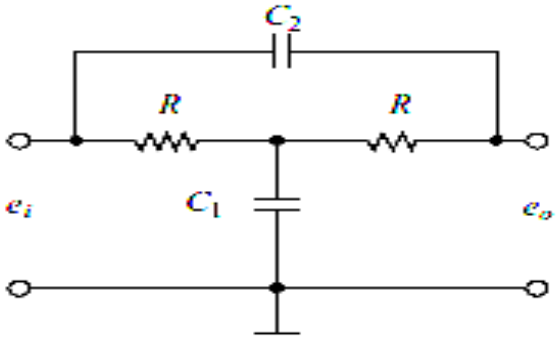
Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Compare the open-loop and closed-loop control systems. 7 Marks

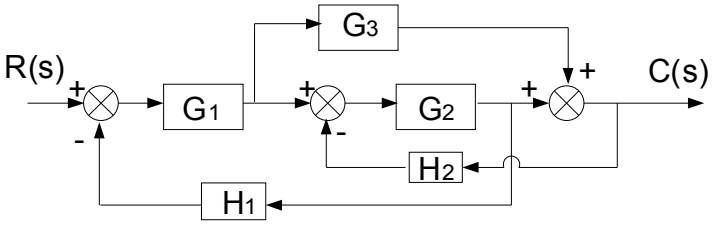
b) Obtain the transfer functions *E*o(s)/*E*i(s) of the bridged T network 7 Marks



(OR)

2 a) Develop the block diagram for armature controlled DC motor. 7 Marks

b) Determine the overall transfer function for the system shown in the figure using block diagram reduction technique. 7 Marks



UNIT-II

3 a) Draw the second order system step response and indicate all time domain specifications. 6 Marks

b) A unity feedback system is characterized by the open loop transfer function G(s)=1000(s+1)/(s+10)(s+50). Determine the steady state error for unit-step, unit-ramp and unit acceleration inputs. Also determine the damping ratio and natural frequency of dominant roots. 8 Marks

(OR)

4 a) Discus the effect of P, PI, PD on control system characteristics. 6 Marks

b) Find the steady state error as a function of time for the feedback system G(s) = 100/s(1+0.1s), H(s)= 5/(s+4) for the input $r(t)=1+2t+(t^2/2)$. 8 Marks

UNIT-III

5 a) Determine the stability of the system represented by the characteristic equations $\mathbf{s^6+3s^5+5s^4+9s^3+8s^2+6s+4=0}$, also determine the number of roots on the right half s-plane. 8 Marks

b) Discus the effect of addition poles and zeros to open loop transfer function. 6 Marks

(OR)

6 A feedback control system has an open loop transfer function G(s). 14 Marks
$\boldsymbol{H(s) = K/s(s+3)(s^2+2s+2)}$**.** Find the root locus as K varies from 0 to ∞.

UNIT-IV

7 A unity feedback system has an open loop transfer function $G(s) = \frac{4s+1}{s^2(s+1)(1+2s)}$. Sketch the Nyquist plot and determine whether the closed loop system stable or not. 14 Marks

(OR)

8 Consider a unity feedback system having an open loop transfer function $G(S) = \frac{K}{S(1+0.5S)(1+4S)}$, sketch the Bode plot and determine the value of '*k*' so that gain margin is 20 db and phase margin is 30^0. 14 Marks

UNIT-V

9 a) Define the terms state variable and state transition matrix. 6 Marks

b) Obtain the state space representation in Phase variable and Jordan form for the system whose transfer function is given by T(s) = (s+1)/s(s+4)(s+5). 8 Marks

(OR)

10 A system is characterized by the following state space equations. 14 Marks

$$\begin{bmatrix} X_1 \\ X_2 \end{bmatrix} = \begin{bmatrix} -3 & 1 \\ -2 & 0 \end{bmatrix} \begin{bmatrix} X_1 \\ X_2 \end{bmatrix} + \begin{bmatrix} 0 \\ 1 \end{bmatrix} u;\ t > 0$$

$$y = \begin{bmatrix} 1 & 0 \end{bmatrix} \begin{bmatrix} X_1 \\ X_2 \end{bmatrix}$$

i) Compute the state transition matrix.

ii) Solve the state equation for the unit step input under zero initial conditions.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

THEORY OF COMPUTATION

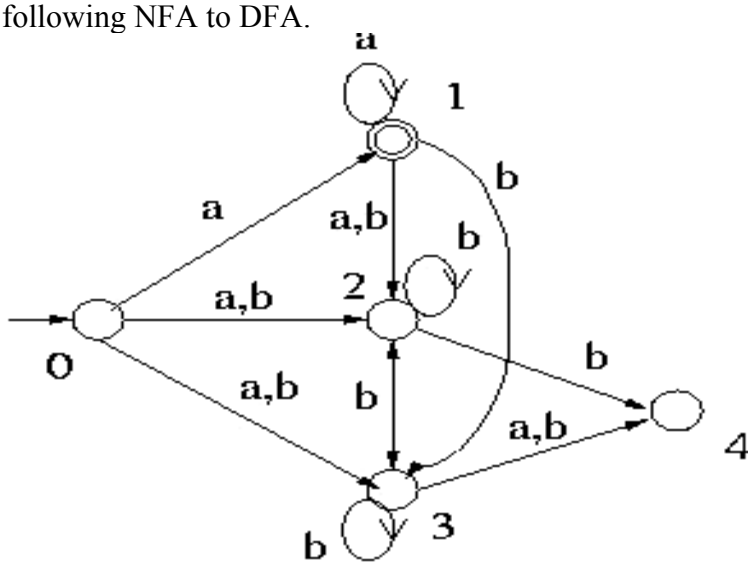
[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Convert the following NFA to DFA. 14 Marks



(OR)

2 Give the state diagram of a DFA that accepts only binary strings which represent numbers divisible by two or three. e.g., it accepts 0, 00, 10, 011, but it rejects the empty string, 1, 101, 0111. 14 Marks

UNIT-II

3 Construct a Finite Automata for the regular expression (ab)*a+b. 14 Marks

(OR)

4 Prove that if **r** be a regular expression, then there exists an NFA with epsilon transitions that accepts L(**r**). 14 Marks

UNIT-III

5 Consider the context free grammar $G = (V,\Sigma,R,S)$ where V is $\{S,A,B,a,b,c\}$, Σ is $\{a,b,c\}$ and R consists of the following rules: 14 Marks

$S \to A \quad A \to aS \quad A \to a$

$S \to B \quad B \to bS \quad B \to b$

Is this grammar ambiguous? Justify your answer.

(OR)

6 Consider the push-down automaton $M = (K, \Sigma, \Gamma, \Delta, s, F)$ where $K = \{s, f\}$, $\Sigma=\{a, b\}$, $\Gamma = \{a, b\}$, $F = \{f\}$, and Δ consists of the following transitions: 14 Marks

((*s,a,e*),(*s,a*)), ((*s,b,e*),(*s,b*)), ((*s,a,e*),(*f,e*)), ((*f,a,a*),(*f,e*)), ((*f,b,b*),(*f,e*)).

i) Which of the folowing words are in $L(M)$? Circle all that are -
abab, aaa, aab, bbbaaabbb, aabbaa, aaaabb

ii) Describe the language accepted by M in simpler terms (that is, without reference to a push-down automaton).

UNIT-IV

7	Design a Turing machine which recognizes palindrome over alphabet {0, 1}.	14 Marks
	(OR)	
8	Explain Multitape Turing machine and Non-deterministic Turing machine.	14 Marks

UNIT-V

9	Show that for two recursive language L1 and L2 each of the following is recursive i) L1∪ L2 ii) L1∩ L2 iii) L1	14 Marks
	(OR)	
10	Explain primitive recursive function.	14 Marks

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CODE No.:16BT3HS01 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

ENVIRONMENTAL STUDIES

[Civil Engineering, Mechanical Engineering, Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write a detailed note on floods and droughts.	CO2	7 Marks
	b)	With the help of a case study, discuss the problems of mining.	CO2	7 Marks
		(OR)		
2	a)	Write a short note on water logging and salinity.	CO1	7 Marks
	b)	Explain the role of every individual in conserving the natural resources.	CO1	7 Marks

UNIT-II

3	a)	Explain the structural and functional features of Estuary.	CO2	7 Marks
	b)	Classify the types of energy pyramids and discuss why the pyramid of energy is always upright.	CO2	7 Marks
		(OR)		
4	a)	Write a detailed note on conservation of biodiversity.	CO2	8 Marks
	b)	What is a Hotspot? Write about the Hotspots of India.	CO2	6 Marks

UNIT-III

5	a)	Discuss the sources, affects and control measures of water pollution.	CO3	8 Marks
	b)	With the help of a case study, discuss nuclear pollution.	CO4	6 Marks
		(OR)		
6	a)	Classify various types of solid and hazardous wastes from urban and industry.	CO5	7 Marks
	b)	Write a detailed note on thermal pollution.	CO4	7 Marks

UNIT-IV

7	a)	Discuss about global warming.	CO6	7 Marks
	b)	Discuss the features of environmental protection act.	CO8	7 Marks
		(OR)		
8	a)	Write a detailed note on green revolution.	CO7	7 Marks
	b)	Discuss the features of forest conservation act.	CO8	7 Marks

UNIT-V

9	a)	What is Environmental Impact Assessment? What does it contain?	CO7	7 Marks
	b)	What is population explosion? Explain the impact of population growth on environment.	CO6	7 Marks
		(OR)		
10	a)	Write detailed note on value education to improve the environment.	CO9	7 Marks
	b)	Discuss the importance of women and child's welfare.	CO9	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

ELECTRONIC CIRCUIT ANALYSIS AND DESIGN

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Derive the expression for current gain of common emitter amplifier with emitter resistor.	CO1	7 Marks
	b)	Explain in detail about amplitude and frequency distortions in amplifier.	CO1	7 Marks
		(OR)		
2	a)	Derive the expression for input impedance and current gain of the darlington pair.	CO4	7 Marks
	b)	What is Bootstrapping and what is the advantage of it?	CO4	7 Marks

UNIT-II

3	a)	What is the effect of bypass capacitor on the frequency response of an amplifier?	CO4	7 Marks
	b)	Write a short note on hybrid-π capacitances.	CO2	7 Marks
		(OR)		
4	a)	Derive the expression for upper cutoff frequency of common source amplifier.	CO1	7 Marks
	b)	How to represent the high frequency response of amplifier with an equivalent circuit?	CO1	7 Marks

UNIT-III

5	a)	An amplifier with open loop gain A_V=1000±100 is available. It is necessary to have an amplifier whose voltage gain varies by no more than ±0.1%. i) Find the reverse transmission factor of the feedback network used. ii) Find the gain with feedback.	CO3	7 Marks
	b)	Derive the expression for transfer gain, input and output impedances of current series feedback amplifier.	CO3	7 Marks
		(OR)		
6		Derive the expression for frequency of oscillations and magnitude condition in Hartley oscillator.	CO3	14 Marks

UNIT-IV

7	a)	What is heat sink and mention its role with respect to power amplifiers?	CO2	7 Marks
	b)	Derive the expression for maximum efficiency of series fed class A power amplifier.	CO2	7 Marks
		(OR)		
8	a)	Draw the circuit diagram of MOSFET power amplifier and explain its operation.	CO2	7 Marks
	b)	Explain in detail about the operation of class B push pull power amplifier.	CO2	7 Marks

UNIT-V

9	a)	Draw the circuit diagram of stagger tuned amplifier and explain its operation.	CO1	7 Marks
	b)	What is the effect of cascading on the bandwidth of tuned amplifiers?	CO1	7 Marks
		(OR)		
10	a)	What is a class C tuned amplifier?	CO1	7 Marks
	b)	Compare single and double tuned amplifiers in all respects.	CO1	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

SIGNALS AND SYSTEMS

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

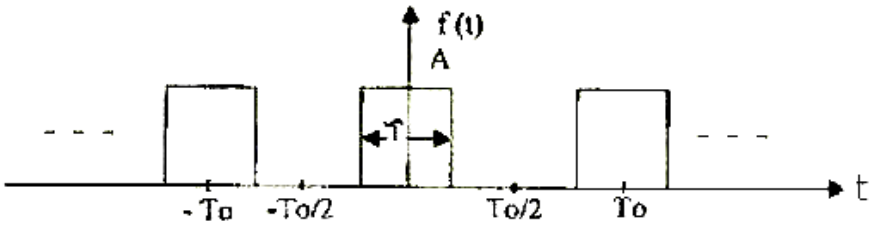
1	a)	Analyze and explain the applications of signals and systems in real time world.	CO3	7 Marks
	b)	Check the system $y(t)= \log10 \mid x(t) \mid$ is linear, Time invariant and stable.	CO4	7 Marks

(OR)

2	a)	Sketch the bounded and unbounded signals and check whether system stable or not.	CO3	7 Marks
	b)	Determine whether the following systems are time invariant or not. i) $y(t) = tx(t)$; ii) $y(n) = x(2n)$.	CO1	7 Marks

UNIT-II

3	a)	Find out the exponential Fourier series and plot the magnitude and phase spectrum for the rectangular pulse train shown in the following figure:	CO3	7 Marks



	b)	Explain the concept of generalized Fourier series representation of signal $F(t)$.	CO2	7 Marks

(OR)

4	a)	Obtain the Fourier transform of the following functions. i) Impulse function; ii) DC signal; iii) Unit step function.	CO2	7 Marks
	b)	Find the Fourier Transform of $f(t) = t \cos(2t)$.	CO3	7 Marks

UNIT-III

5	a)	State and prove Parseval's theorem.	CO2	7 Marks
	b)	State and prove the relation between convolution and correlation.	CO1	7 Marks

(OR)

6	a)	Define auto-correlation and cross-correlation. Prove any two properties of correlation function.	CO2	7 Marks
	b)	Determine auto and crosscorrelation. ESD of the signal $x(t)A \sin(wt+ \theta)$.	CO1	7 Marks

UNIT-IV

7	a)	Define Laplace Transform and explain the properties of Laplace Transform.	CO4	7 Marks
	b)	Find the Laplace transform of the following signal and its ROC. $x(t) = e^{-5t}\ [u(t) - u(t-5)]$	CO5	7 Marks

(OR)

8	a)	Find the transfer function ideal differentiator.	CO4	7 Marks
	b)	Prove the relation between Fourier and Laplace transform.	CO5	7 Marks

UNIT-V

9	a)	State and prove the following properties of Z transform. i) Time shifting; ii) Correlation; iii) Convolution.	CO1	7 Marks
	b)	Explain quantitatively how the signal is reconstructed from its samples.	CO2	7 Marks
		(OR)		
10	a)	Determine the *Z* Transform of the Signal. i) $x(n)=\{1, 2, 0, 2\}$; ii) $x(n)=\{1, 2, -1, 2, 9\}$; iii) $x(n) = u(n) - u(n - 5)$.	CO3	7 Marks
	b)	Prove the differentiation property of Z transform. Explain the concept of ROC in Z transform.	CO1	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

SWITCHING THEORY AND LOGIC DESIGN

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Subtract the following binary numbers using 2's complement. i) 10110 – 1011 ii) 1100.10 – 111.01	CO1	6 Marks
	b)	Express the following functions in a sum of minterms. i) **F = D(A' + B) + B'D** ii) **F = y'z + wxy' + wxz' + w'x'z**	CO1	8 Marks
		(OR)		
2	a)	The message below was coded in Hamming code and transmitted through a noisy channel. Decode the message assuming that a single bit error has occurred in the following code words. Assume even parity. i) 1011001 ii) 1100011	CO1	8 Marks
	b)	Draw the logic diagram corresponding to the following Boolean expressions without simplifying them: i) $BC' + AB + ACD$. ii) $(A + B)(C + D)(A' + B + D)$.	CO1	8 Marks

UNIT-II

3	a)	Obtain the minimal expression $F = \Sigma_m (0, 1, 4, 6, 8, 9, 11) + d(2, 7, 13)$ using K-map.	CO5	6 Marks
	b)	Obtain the minimal expression $F=\Sigma_m (0, 2, 3, 6, 7, 8, 10, 11, 12, 15)$ using tabulation method.	CO5	8 Marks
		(OR)		
4	a)	Simplify the following Boolean functions using K-map: $F = A'B'CE' + A'B'C'D' + B'D'E' + B'CD' + CDE' + BDE'$	CO5	8 Marks
	b)	Show that NAND is functionally complete.	CO2	6 Marks

UNIT-III

5	a)	Show that a full-subtractor can be constructed with two half-subtractors and an OR gate.	CO3	7 Marks
	b)	Implement the following Boolean function with a 8 x 1 multiplexer. $F(A, B, C, D) = \Sigma_m (0, 3, 5, 6, 8, 9, 14,1 5)$	CO2	7 Marks
		(OR)		
6	a)	Design a combinational circuit with four inputs that represent a decimal digit in BCD and four outputs that produce the 9's complement of the input digit.	CO3	7 Marks
	b)	A combinational circuit is defined by the following functions: $F_1 = x'y' + xyz'$; $F_2 = x' + y$; $F_3 = xy + x'y'$ Design the circuit with a decoder and OR gates.	CO2	7 Marks

UNIT-IV

7	a)	What is race around problem in JK flip-flops? Explain a method of eliminating this problem.	CO2	6 Marks
	b)	Draw the logic diagram of mod 6 ripple counter using T flip-flops and explain its operation with the help of timing waveforms.	CO5	8 Marks
		(OR)		
8	a)	Draw and explain a 4-bit bidirectional shift register with parallel load.	CO1	8 Marks
	b)	Convert T and JK flip-flops to D flip-flop.	CO2	6 Marks

UNIT-V

9	a)	Show how the PLA circuit would be programmed to implement the sum and carry outputs of a full-adder.	CO3	7 Marks
	b)	Implement the following Boolean functions using PAL: $F_1 = \Sigma_m$ **(0, 2, 5,7,8,10,12,13)**; $F_2 = \Sigma_m$ **(0, 2, 6, 8, 9, 14, 15)**	CO3	7 Marks
		(OR)		
10	a)	With the help of neat diagram, explain the operation of PAL.	CO3	6 Marks
	b)	Realize the following functions using PROM of size 8 x 3: $F_1 = \Sigma_m$ **(0, 4, 7)**; $F_2 = \Sigma_m$ **(1, 3, 6)**; $F_3 = \Sigma_m$ **(1, 2, 4, 6)**.	CO1	8 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

CONCRETE TECHNOLOGY

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Briefly explain different types of cement and also explain about grades of cement.	CO1	14 Marks
		(OR)		
2		Explain the term super plasticizers. How are they useful in concrete production?	CO6	14 Marks

UNIT-II

3		Explain various tests for workability of concrete.	CO4	14 Marks
		(OR)		
4	a)	Explain segregation and bleeding of concrete.	CO4	7 Marks
	b)	Explain batching and mixing of concrete.	CO4	7 Marks

UNIT-III

5	a)	Explain briefly modulus of elasticity.	CO1	7 Marks
	b)	What are the types of shrinkage cracks?	CO1	7 Marks
		(OR)		
6		List out non-destructive tests and explain any two with sketches.	CO5	14 Marks

UNIT-IV

7		List out various types of mix design methods and explain any one in brief.	CO3	14 Marks
		(OR)		
8		Design the mix proportioning for a concrete of M20 grade concrete Type of cement- OPC 53 grade concrete Max size of aggregate -20mm Max W/C ratio-0.45 Workability-50 to75 mm Specific gravity of cement-3.15 Specific gravity of coarse aggregate-2.8 Specific gravity of fine aggregate-2.7 Fine aggregate confirming to zone-II.	CO3	14 Marks

UNIT-V

9		List out special concretes and explain any two concretes.	CO7	14 Marks
		(OR)		
10	a)	What is importance of fibres in concrete?	CO6	7 Marks
	b)	What are the advantages of light weight concrete?	CO6	7 Marks

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CODE No.:16BT40102 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

ENGINEERING GEOLOGY

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Why should a civil engineer acquire basic knowledge of geology to become a successful civil engineer? Explain in brief.	CO1	14 Marks
		(OR)		
2		Explain the phenomena of weathering of rocks. How do you classify the weathered rock mass?	CO1	14 Marks

UNIT-II

3	a)	How do you study the hardness of minerals?	CO2	4 Marks
	b)	How do you distinguish feldspar from quartz mineral?	CO2	10 Marks
		(OR)		
4		How do you distinguish a mineral from rock? Discuss in brief about various engineering properties of rocks to be considered in selection of rocks as building materials.	CO2	14 Marks

UNIT-III

5		Comprehend the classification of folds and their importance in civil engineering.	CO2	14 Marks
		(OR)		
6		Explain about sub surface investigation using seismic method. What are the applications of seismic method in civil engineering?	CO4	14 Marks

UNIT-IV

7	a)	What do you understand about cone of depression? How is this knowledge useful in the study of groundwater recovery and sustaining groundwater resources?	CO6	8 Marks
	b)	Explain about groundwater movement.	CO1	6 Marks
		(OR)		
8	a)	Distinguish between intensity and magnitude of earthquakes. What do you understand about seismic zones?	CO5	8 Marks
	b)	Explain about causes of occurrence of landslides.	CO5	6 Marks

UNIT-V

9		Give a brief note on geology of any dam that failed in the past and analyze the conditions that have lead to failure of the dam. How do you prepare a geological report for site investigation of a dam?	CO7	14 Marks
		(OR)		
10		Enumerate the geological considerations in tunneling.	CO3	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

ENGINEERING HYDROLOGY

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Explain the hydrologic cycle with a neat sketch role of hydrology in water resources engineering.	CO1	14 Marks
		(OR)		
2		Explain various types of automatic type and non-automatic type rain gauges with neat sketches.	CO1	14 Marks

UNIT-II

3		What is evaporation and explain various methods for reduction of evaporation.	CO4	14 Marks
		(OR)		
4		What is evapotranspiration and explain various methods for the direct measurement of evapotranspiration.	CO2	14 Marks

UNIT-III

5	a)	What is stream gauging and explain the area velocity method.	CO1	7 Marks
	b)	Explain various methods for the estimation of Run-off.	CO2	7 Marks
		(OR)		
6	a)	Derive an expression for discharge for an unconfined aquifer.	CO2	7 Marks
	b)	Explain mass curve of rainfall and double mass curve.	CO3	7 Marks

UNIT-IV

7		Define S-Hydrograph and explain with a neat sketch.	CO5	14 Marks
		(OR)		
8		Explain various methods for the separation of base flow.	CO5	14 Marks

UNIT-V

9		What is the life of reservoir and explain the procedure for the estimation of life of a reservoir.	CO6	14 Marks
		(OR)		
10		Explain various methods for reservoir sediment control.	CO7	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

STRUCTURAL ANALYSIS - I

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Derive an expression for the stresses on an oblique plane of a rectangular body, when the body is subjected to a simple shear stress.	CO1	7 Marks
	b)	At a point with in a body subjected to two mutually perpendicular directions the stresses are 100N/mm² (tensile). Each of the above stresses is accompanied by a shear stress of 75N/mm². Determine the normal, shear and resultant stresses on an oblique plane inclined at an angle of 45 degrees with the axis of minor tensile stress.	CO1	7 Marks

(OR)

2		Draw Mohr's circle for principal stresses of 80N/mm² tensile and 50N/mm² compressive, and find the resultant stresses on planes making 22 degrees and 64 degrees with the major principal plane. Also find the normal and tangential stresses on these planes.	CO1	14 Marks

UNIT-II

3		State and prove the Moment area theorems.	CO1	14 Marks

(OR)

4		A beam of length 'L' simply supported at the ends carries a point load 'W' at a distance 'a' from the left end. Find the deflection under the load and maximum deflection.	CO3	14 Marks

UNIT-III

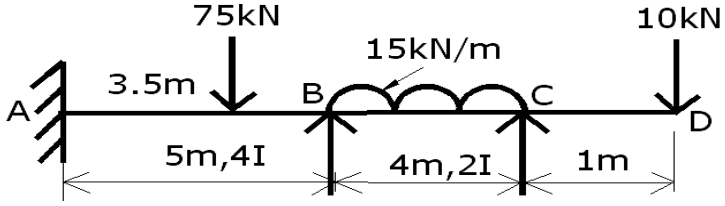
5		Derive Euler's formula for critical load of a column, when one end is fixed and other is free.	CO3	14 Marks

(OR)

6		A steel bar of rectangular section 30mm x 40mm pinned at each end is subjected to axial compression. The bar is 1.75m long. Determine the buckling load and the corresponding axial stress using Euler's formula. Determine the minimum length for which Euler's equation may be used to determine the buckling load, if the proportional limit of the material is 200N/mm². Take E = 2 x 10^5N/mm².	CO2	14 Marks

UNIT-IV

7		Analyse the continuous beam shown in figure below by Clapreyon's theorem of three moments.	CO1	14 Marks



(OR)

8		A Propped cantilever beam AB of span 10cm carries a uniformly distributed load of 40kN/m over a length of 5m starting from its fixed end A. The beam also carries 2 point loads of 40kN each acting at 2.5m and 5m from point A. Analyse the beam and draw bending moment diagram.	CO3	14 Marks

UNIT-V

9		A tension member consists of a T-section symmetrical about the vertical center line having the following dimensions: Top flange: 100mm wide and 20 mm thick. The member transmits a longitudinal pull P which acts on the section at a point on the center line and 40mm from the bottom edge of the web. Find: i) the magnitude of P if the greatest tensile stress on the section is 140N/mm² ii) the maximum stress on the section when P is being transmitted.	CO2	14 Marks

(OR)

10	a)	Write about the failures of principal theories.	CO1	7 Marks
	b)	Write about the failures of strain energy theory.	CO1	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

WATER SUPPLY ENGINEERING

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain need for protected water supplies.	CO1	5 Marks
	b)	What are the common impurities found in natural sources of water and explain their effects on water quality.	CO1	9 Marks
		(OR)		
2	a)	Discuss briefly various surface and ground water sources used for water supply.	CO2	9 Marks
	b)	In a water treatment plant the pH values of incoming and outgoing waters are 7 and 8 respectively. Assuming linear variation of pH with time, determine the average pH value of water.	CO2	5 Marks

UNIT-II

3	a)	What are the various materials commonly used for water supply pipes? Discuss merits and demerits any five materials.	CO3	7 Marks
	b)	Describe various factors that affect the per capita consumption of water.	CO1	7 Marks
		(OR)		
4	a)	From the following senses data, predict the future population of the city for the year 2021, using Geometrical increase method and Arithmetic increase method.	CO2	8 Marks

Year	1951	1961	1971	1981	1991	2001
Population	25,000	31,000	35,550	46,500	58,000	67,500

	b)	Draw a neat diagram of canal intake and explain its salient features.	CO1	6 Marks

UNIT-III

5	a)	Design a rectangular sedimentation tank for 2 lakh population with an assured water supply of 135 lpcd. The peak daily demand is taken as 1.8 times of average demand and detention time may be taken as 4 hours. Assume required data suitably.	CO3	8 Marks
	b)	Explain various types of chlorination.	CO6	6 Marks
		(OR)		
6	a)	Explain how alum acts as a coagulant. State the advantages and disadvantages of alum.	CO5	7 Marks
	b)	With a neat diagram, discuss how various valves are operated for working and back washing of a rapid gravity filter.	CO1	7 Marks

UNIT-IV

7	a)	Describe various water distribution systems with neat sketches. Explain suitability, merits and demerits of each system.	CO1	7 Marks
	b)	What are the functions of a distribution reservoir? Draw the diagram of an elevated service reservoir showing various appurtenances.	CO1	7 Marks
		(OR)		
8	a)	Explain zeolite process of removal of hardness. What are the major advantages of zeolite process?	CO4	8 Marks
	b)	Describe one method each for the removal of excess fluorides and iron and manganese from water supplies.	CO6	6 Marks

UNIT-V

9	a)	Discuss various principles involved in the design of water supply for buildings.	CO6	10 Marks
	b)	Draw important pipe fittings used in making pipe connections.	CO5	4 Marks
		(OR)		
10	a)	Draw a sketch of service connection from the street main to a residential building and state the functions of each fitting used.	CO3	7 Marks
	b)	What are the general requirements of domestic water storage tanks? Sketch a storage tank for domestic use and label all parts.	CO3	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

ELECTRICAL MEASUREMENTS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe the constructional details and working of PMMC instruments with neat diagram.	CO1	7 Marks
	b)	Explain different types of deflecting systems which are operating in an indicating instrument.	CO1	7 Marks
		(OR)		
2	a)	Three resistors have the ratings $R_1=37 \pm 5\%$, $R_2=75 \pm 3\%$, $R_3=50 \pm 5\%$. Determine the magnitude and limiting error in ohm and percentage error of the resistance when three resistors are connected in series.	CO4	7 Marks
	b)	Design a multi range voltmeter with the ranges of 0–1V, 0–5V, 0–25V, and 0–125V using individual multipliers. A basic meter with an internal resistance of 1800Ω and full scale reading of 50 μA is available. Calculate the values of the individual multipliers.	CO3	7 Marks

UNIT-II

3		Describe the constructional details of the electrodynamometer type wattmeter with a neat sketch and also derive the torque equation.	CO2	14 Marks
		(OR)		
4	a)	Explain the constructional details of three phase energy meter with a neat diagram.	CO1	7 Marks
	b)	The meter constant of a 230V, 10A watt-hour meter is 1800 revolutions per kWh. The meter is tested at half load, rated voltage and unity power factor .The meter is found to make 80 revolutions in 138 seconds. Determine the meter error at half load.	CO4	7 Marks

UNIT-III

5		Draw the equivalent circuit and phasor diagram of a potential transformer and derive the expressions for ratio and phase angle errors.	CO2	14 Marks
		(OR)		
6	a)	Describe in detail about the construction and working principle of single phase EDM type power factor meter.	CO1	7 Marks
	b)	A 800/5A, 50Hz current transformer with a single turn primary has a secondary burden comprising a non reactive resistance of 4Ω. The secondary winding of 160 turns has a resistance of 0.2Ω. At the rated secondary current, calculate i) Flux in the core. ii) The actual ratio of primary to secondary current. No load primary current of 6A lags by 30^0 to the reversed secondary voltage.	CO4	7 Marks

UNIT-IV

7	a)	Describe the method of measurement of medium resistance using Wheatstone bridge.	CO1	7 Marks
	b)	A Kelvin double bridge has each of the ratio arms P = Q = p = q=1000Ω. The e.m.f of the battery is 100V and resistance of 5Ω is included in the circuit. The galvanometer has a resistance of 500Ω and the resistance of the link connecting the unknown resistance to the standard resistance may be neglected. The bridge is balanced when standard resistance S=0.001Ω. i) Determine the value of unknown resistance. ii) Determine the current through the unknown resistance and at balance.	CO4	7 Marks

(OR)

8	a)	Derive the expression for unknown inductance by balancing Anderson's bridge and draw the phasor diagram.	CO2	7 Marks
	b)	Calculate the unknown inductance and resistance measured by Hay's bridge. The bridge elements at the balancing condition are R_1=5.1KΩ, C_1=2μF, R_2=7.9KΩ, R_3=790Ω, the supply angular frequency is 1000 rad/sec.	CO6	7 Marks

UNIT-V

9	a)	Explain the term standardization of a potentiometer. Describe the procedure for standardization of a A. C. potentiometer.	CO1	7 Marks
	b)	A slide wire potentiometer has a 6V battery with negligible internal resistance. The resistance of the slide wire is 200Ω and length of slide wire is 200cm. A standard cell of 1.018V is used for the standardizing the potentiometer and rheostat is adjusted so that the balance is obtained when the sliding contact is at 101.8cm. i) Find the working current of the slide wire and rheostat setting. ii) If the slide wire has divisions marked in mm and each division can be interpolated to one-fifth of a division, calculate resolution of instrument.	CO4	7 Marks

(OR)

10	a)	Draw the block diagram of a CRO and explain the function of different blocks.	CO1	7 Marks
	b)	Describe in detail about the ramp type digital voltmeter with neat diagram.	CO1	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

GENERATION OF ELECTRIC POWER

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe how the condenser is responsible to overcome the poor efficiency in a thermal power station.	CO1	7 Marks
	b)	Draw the typical layout of hydro power plant and discuss the operation of following components. i) dam. (ii) spillway. (iii) penstock. (iv) surge tank.	CO1	7 Marks
		(OR)		
2	a)	Explain the need of super heater and economizer in thermal power plant. Discuss their operation.	CO7	8 Marks
	b)	Compare Francis and Kaplan turbines.	CO1	6 Marks

UNIT-II

3	a)	Explain the principle of operation of nuclear reactor with neat diagram.	CO1	7 Marks
	b)	Explain Pressurised water reactor with neat diagram. Also list out its advantages and limitations.	CO1	7 Marks
		(OR)		
4	a)	Explain the operation and schematic layout of diesel power plant in sequence.	CO2	8 Marks
	b)	Compare nuclear, diesel and gas power plants.	CO2	6 Marks

UNIT-III

5	a)	Compare vertical and horizontal axis wind mills.	CO6	6 Marks
	b)	Explain the construction and operation of a basic fuel cell.	CO6	8 Marks
		(OR)		
6	a)	List out the applications of solar power and briefly explain any two applications with necessary diagrams.	CO6	6 Marks
	b)	Estimate the impact of renewable energy generation on environment as well as on the present power scenario.	CO8	8 Marks

UNIT-IV

7	a)	Generating station has a maximum demand of 15MW and the daily load on the station is as follows:	CO1	7 Marks

Duration	Load Demand	Duration	Load Demand
10 p.m to 5 a.m	2500 kW	1 p.m to 4 p.m	10000 kW
5 a.m to 7 a.m	3000 kW	4 p.m to 6 p.m	12000 kW
7 a.m to 11 a.m	9000 kW	6 p.m to 8 p.m	15000 kW
11 a.m to 1 p.m	6000 kW	8 p.m to 10 p.m	5000 kW

Determine the number of generator units, plant load factor, plant capacity factor, plant use factor and reserve capacity of the plant. Draw load curve.

	b)	A plant costs Rs. 80,000 and has a useful life of 15 years. If the salvage value of the equipment is Rs. 5,000, determine the amount which should be saved annually to replace the equipment at the end of that time by; (i) the straight line method. (ii) the sinking fund method assuming that the annual rate of compound interest is 5%.	CO4	7 Marks

(OR)

8 a) A generating station has the following daily load cycle CO2 8 Marks

Time (Hrs)	0-6	6-10	10-12	12-16	16-20	20-24
Load (MW)	40	50	60	50	70	40

Draw the load curve and find:

i) Maximum demand.
ii) Units generated per day.
iii) Average load and load factor.

b) Discuss the two part tariff and power factor tariffs. CO4 6 Marks

UNIT-V

9 a) Explain the methods to improve the power factor and consequent advantages. CO3 8 Marks

b) What is cogeneration and what are the benefits of cogeneration? CO8 6 Marks

(OR)

10 a) A single phase motor connected to 400V, 50Hz supply takes 31.7A at a power factor of 0.7 lagging. Calculate the capacitance required in parallel with the motor to raise the power factor to 0.9 lagging. CO3 7 Marks

b) Explain the operation of combined heat and power cogeneration systems with layout diagram. Mention the limitations of cogeneration systems. CO4 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

TRANSFORMERS AND INDUCTION MACHINES

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the constructional details of transformers with neat diagram.	CO1	7 Marks
	b)	Draw and explain the phasor diagrams of ideal and practical transformers under NO-LOAD conditions.	CO2	7 Marks
		(OR)		
2	a)	Derive the EMF equation of a transformer.	CO1	5 Marks
	b)	A 5kVA, 500/250V, 50Hz, single phase transformer gave the following readings. **O.C. Test**: 500 V, 1 A, 50 W (L.V. side open) **S.C. Test**: 25 V, 10 A, 60 W (L.V. side shorted) Determine: i) The efficiency on full load, 0.8 lagging P.F. ii) The voltage regulation on full load, 0.8 leading P.F. iii) The efficiency on 60% of full load, 0.8 leading P.F. iv) Draw the equivalent circuit referred to primary and insert all the values in it.	CO4	9 Marks

UNIT-II

3	a)	Explain the parallel operation of transformers with suitable diagrams.	CO1	9 Marks
	b)	What is all day efficiency? Explain its significance.	CO4	5 Marks
		(OR)		
4		Draw and explain the equivalent circuit of transformer and compare with two winding transformer.	CO1	14 Marks

UNIT-III

5		With suitable diagrams, explain 3-phase Star and Delta configurations and also derive phase and line currents using phasor diagrams.	CO1	14 Marks
		(OR)		
6	a)	Explain the tertiary winding of 3-phase transformer.	CO1	5 Marks
	b)	A 3-Phase step-down transformer is connected to 6.6kV mains and takes 10A. Calculate the secondary line voltage, line current and output for the following connections: i) Δ/Δ (ii) Y/Y (iii) Y/Δ The ratio of turns per phase is 12. Neglect losses.	CO4	9 Marks

UNIT-IV

7	a)	Explain principle of operation of 3-phase induction motor with its constructional details.	CO1	9 Marks
	b)	Explain production of rotating magnetic field in a 3-phase induction motor.	CO2	5 Marks
		(OR)		
8	a)	Derive torque equation along with maximum and starting torque expression.	CO1	8 Marks
	b)	A 3-phase, 400V, 50Hz induction motor takes a power input of 35kW at its full-load speed of 980 r.p.m. The total stator losses are 1.5kW. Calculate: i) Slip. ii) Rotor ohmic losses. iii) Shaft power. iv) Shaft torque. v) Efficiency.	CO4	6 Marks

UNIT-V

9		Draw the circle diagram for a 7.46kW, 230V, 50Hz, 4-pole, 3-phase star connected induction motor from the following test data: **No-Load test:** Line voltage 230V, Line current 7A, total input 550W **Blocked Rotor test:** Line voltage 120V, Line current 30A, total input 1800W. Estimate from the diagram for full-load condition, the line current, power factor and also the maximum torque in terms of the full-load torque. The rotor Copper loss at standstill is half the total Cu loss.	CO4	14 Marks
		(OR)		
10	a)	Explain the operation of induction generator.	CO1	6 Marks
	b)	Explain the speed control techniques of induction motor with: i) Change of frequency. ii) Change of poles.	CO2	8 Marks

CODE No.:16BT40301 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

DESIGN OF MACHINE ELEMENTS-I

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain different types of design with an example each.	CO1	4 Marks
	b)	Name commonly used metals in machine design and explain their mechanical properties	CO1	10 Marks
		(OR)		
2	a)	State and explain the applications of different theories of failure.	CO1	7 Marks
	b)	A cantilever beam of I-section supports a motor weighing 1.0KN at distance of 500mm from the fixed end. Failure stress for the beam material is 160N/mm². The dimensions of the I-section are B = 4t and H = 5t, where't' is the thickness of flange and web. Assuming suitable factor of safety, find the thickness.	CO2	7 Marks

UNIT-II

3	a)	What are causes of stress concentration and illustrate the methods of reducing stress concentration?	CO2	4 Marks
	b)	A bar of steel has an ultimate tensile strength of 700MPa, a yield point stress of 400MPa and fully corrected endurance limit of 220MPa. The bar is subjected to a mean bending stress of 60MPa and stress amplitude of 80MPa. Super imposed on it is a mean torsional stress and torsional stress amplitude of 70MPa and 35MPa respectively. Find the factor of safety.	CO2	10 Marks
		(OR)		
4	a)	Explain different types of variable stresses indicating mean stress for each case.	CO1	4 Marks
	b)	A bar is subjected to a completely reversed load of 200KN. Determine the diameter of the bar. The ultimate and yield tensile stress of the material are 600MN/m² and 400MN/m² respectively. Factor of safety is 2.0. Proportion the endurance stress in terms of ultimate stress.	CO2	10 Marks

UNIT-III

5	a)	Differentiate between Machine Cap and Set Crew with regard to their applications.	CO1	4 Marks
	b)	A steam engine cylinder has an effective diameter of 250mm. It is subjected to a maximum pressure of 1.5N/mm². The cylinder cover is fixed to the cylinder flange by means of 6 studs. The pitch circle diameter of studs is 500mm. The permissible tensile stress in the stud material is 30N/mm². Determine the nominal diameter of the stud and specify the size of the stud. Is circumferential pitch of the studs is satisfactory?	CO3	10 Marks
		(OR)		
6	a)	Draw a locknut and explain its principle.	CO1	4 Marks
	b)	Explain the design procedure of a welded joint when a load acts eccentrically in the plane of welds.	CO1	10 Marks

UNIT-IV

7	a)	Differentiate between shaft, spindle and axle with an example each.	CO1	4 Marks
	b)	A transmission shaft is supported between two bearings, which are 750mm apart. Power is transmitted from the shaft by means of a belt pulley, 450mm in diameter, which is located at a distance of 200mm to the right of left hand bearing. The weight of the pulley is 300N and the ratio of the belt tensions of the tight and slack is 2:1. The belt tensions act vertically downwards. Determine the shaft diameter, if it transmits 15KW at 400RPM. The allowable shear stress for the shaft material is 50N/mm^2.	CO4	10 Marks

(OR)

8	a)	What are the functions of a key and how a key way is made?	CO1	4 Marks
	b)	Design a muff coupling to connect two steel shafts transmitting 25KW of power at 360RPM. The shaft and key are of same material with a yield tensile stress of 400N/mm^2. The muff is made of cast iron with an ultimate tensile stress of 200 N/mm^2. Factor of safety can be taken as 4.0 for all the stresses.	CO5	10 Marks

UNIT-V

9	a)	Differentiate between shaft coupling and shaft joint.	CO1	4 Marks
	b)	Two rods made of plain carbon steel with a yield tensile stress of 350N/mm^2 are to be connected by means of a cotter joint. The diameter of each rod is 50mm and the cotter is made from steel plate of 15mm thickness. Calculate the dimensions of socket end. Assume: i) Yield strength in compression is twice of the tensile yield strength. ii) Yield strength in shear is 50% of the tensile yield strength. iii) Factor of safety is 5.0.	CO3	10 Marks

(OR)

10	a)	Give applications of cotter and knuckle joints with examples.	CO1	4 Marks
	b)	Draw a knuckle joint and explain its design procedure.	CO3	10 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

DYNAMICS OF MACHINERY

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is clutch? Make a sketch of a single plate clutch and describe its working.	CO1	6 Marks
	b)	A conical friction clutch is used to transmit 90kW at 1500 r.p.m. The semi-cone angle is 20^0 and the coefficient of friction is 0.2. If the mean diameter of the bearing surface is 375mm and the intensity of normal pressure is not to exceed 0.25N/mm², find the dimensions of the conical bearing surface and the axial load required.	CO2	8 Marks

(OR)

2	a)	Describe the construction and operation of a rope brake absorption dynamometer	CO1	6 Marks
	b)	A band and block brake, having 14 blocks each of which subtends an angle of 15° at the centre, is applied to a drum of 1m effective diameter. The drum and flywheel mounted on the same shaft has a mass of 2000kg and a combined radius of gyration of 500mm. The two ends of the band are attached to pins on opposite sides of the brake lever at distances of 30mm and 120mm from the fulcrum. If a force of 200N is applied at a distance of 750mm from the fulcrum, calculate: i) maximum braking torque. ii) angular retardation of the drum. iii) time taken by the system to come to rest from the rated speed of 360 r.p.m. The coefficient of friction between blocks and drum may be taken as 0.25.	CO2	8 Marks

UNIT-II

3	a)	Explain the terms used in a Naval Ship. Explain the effect of Gyroscopic Couple on a Naval Ship in each case with neat sketches.	CO1	7 Marks
	b)	The turbine rotor of a ship has a mass of 3500kg. It has a radius of gyration of 0.45m and a speed of 3000 r.p.m. clockwise when looking from stern. Determine the gyroscopic couple and its effect upon the ship; i) when the ship is steering to the left on a curve of 100m radius at a speed of 36km/h. ii) when the ship is pitching in a simple harmonic motion, the bow falling with its maximum velocity. The period of pitching is 40 seconds and the total angular displacement between the two extreme positions of pitching is 12 degrees.	CO3	7 Marks

(OR)

4	a)	Illuminate the terms 'fluctuation of energy' and 'fluctuation of speed' as applied to flywheels.	CO1	4 Marks
	b)	The turning moment diagram for a petrol engine is drawn to the following scales: Turning moment, 1mm = 5N-m; crank angle, 1mm = 1°. The turning moment diagram repeats itself at every half revolution of the engine and the areas above and below the mean turning moment line taken in order are 295, 685, 40, 340, 960, 270mm². The rotating parts are equivalent to a mass of 36kg at a radius of gyration of 150mm. Determine the coefficient of fluctuation of speed when the engine runs at 1800 r.p.m.	CO3	10 Marks

UNIT-III

5	a)	State and explain the following terms relating to governors. i) Stability. ii) Sensitiveness. iii) Isochronism. iv) Hunting.	CO1	4 Marks
	b)	The arms of a Porter governor are 300mm long. The upper arms are pivoted on the axis of rotation. The lower arms are attached to a sleeve at a distance of 40mm from the axis of rotation. The mass of the load on the sleeve is 70kg and the mass of each ball is 10kg. Determine the equilibrium speed when the radius of rotation of the balls is 200mm. If the friction is equivalent to a load of 20N at the sleeve, what will be the range of speed for this position?	CO2	10 Marks

(OR)

6		In a Hartnell governor, the lengths of ball and sleeve arms of a bell crank lever are 120mm and 100mm respectively. The distance of the fulcrum of the bell crank lever from the governor axis is 140mm. Each governor ball has a mass of 4kg. The governor runs at a mean speed of 300 r.p.m. with the ball arms vertical and sleeve arms horizontal. For an increase of speed of 4 per cent, the sleeve moves 10mm upwards. Neglecting friction, determine : i) The minimum equilibrium speed if the total sleeve movement is limited to 20 mm. ii) The spring stiffness. iii) The sensitiveness of the governor. iv) The spring stiffness if the governor is to be isochronous at 300 r.p.m.	CO4	14 Marks

UNIT-IV

7	a)	Explain clearly the terms 'static balancing' and 'dynamic balancing'. State the necessary conditions to achieve them.	CO1	4 Marks
	b)	A shaft carries four masses in parallel planes A, B, C and D in this order along its length. The masses at B and C are 18kg and 12.5kg respectively, and each has an eccentricity of 60mm. The masses at A and D have an eccentricity of 80mm. The angle between the masses at B and C is 100° and that between the masses at B and A is 190°, both being measured in the same direction. The axial distance between the planes A and B is 100mm and that between B and C is 200mm. If the shaft is in complete dynamic balance, Determine : i) the magnitude of the masses at A and D. ii) the distance between planes A and D. iii) the angular position of the mass at D.	CO4	10 Marks

(OR)

8	a)	Write a short note on primary and secondary balancing.	CO1	4 Marks
	b)	The cranks and connecting rods of a 4-cylinder in-line engine running at 1800 r.p.m. are 60mm and 240mm each respectively and the cylinders are spaced 150mm apart. If the cylinders are numbered 1 to 4 in sequence from one end, the cranks appear at intervals of 90° in an end view in the order 1-4-2-3. The reciprocating mass corresponding to each cylinder is 1.5kg. Determine: (i) Unbalanced primary and secondary forces, if any. (ii) Unbalanced primary and secondary couples with reference to central plane of the engine.	CO4	10 Marks

UNIT-V

9 a) Find the natural frequency of the oscillation in the case shown in figure.1. CO1 7 Marks

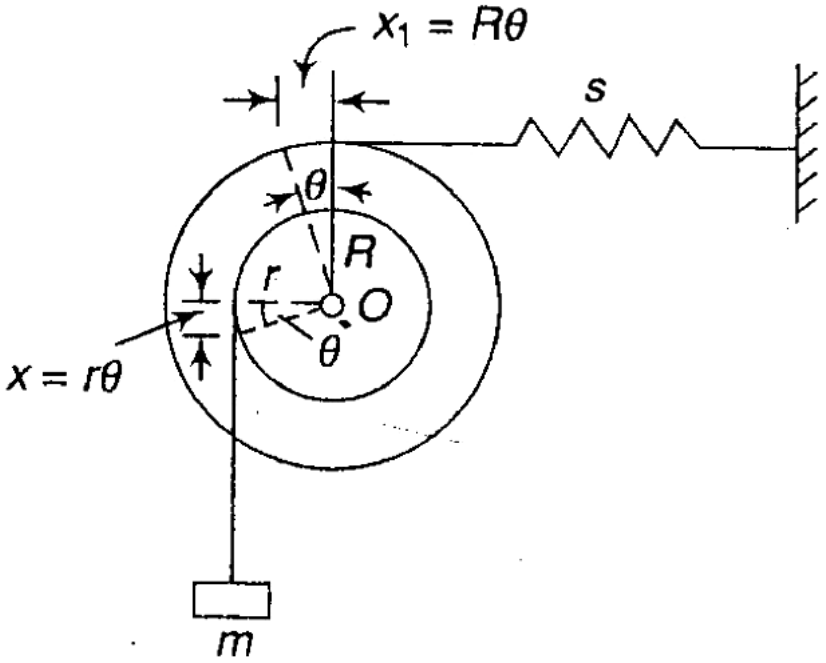

Figure.1

b) A rotor has a mass of 12kg and is mounted midway on a 24mm diameter horizontal shaft supported at the ends by two bearings. The mass of the shaft is 2kg and bearings are 1m apart. The shaft rotates at 2400 r.p.m. If the center of mass of the rotor is 0.11mm away from the geometric center of the rotor due to a certain manufacturing defect, find the amplitude of steady state vibration and the dynamic force transmitted to the bearing. E=200GN/m². CO5 7 Marks

(OR)

10 a) Describe Dunkerley's method to find the natural frequency of a shaft carrying several loads. CO1 6 Marks

b) A torsional system is shown in figure.2. Find the frequencies of torsional vibrations and the positions of the nodes. Also find the amplitudes of vibrations. G=84 x 10^9 N/m² CO5 8 Marks

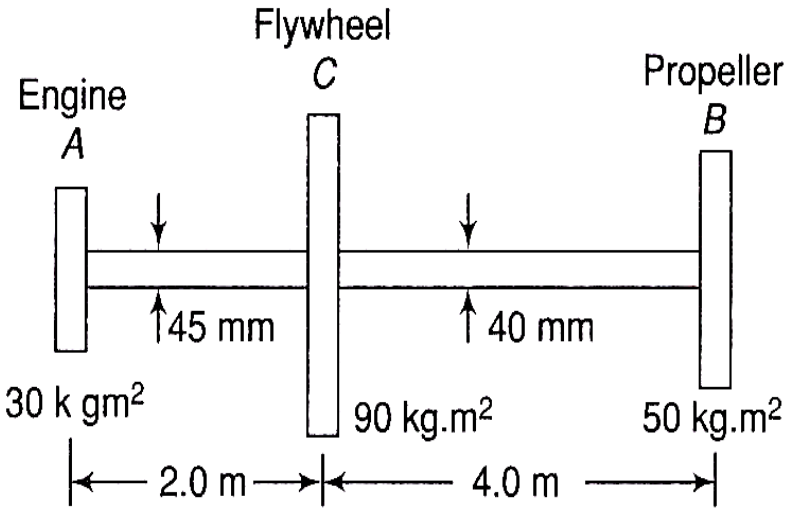

Figure.2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

FLUID MECHANICS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

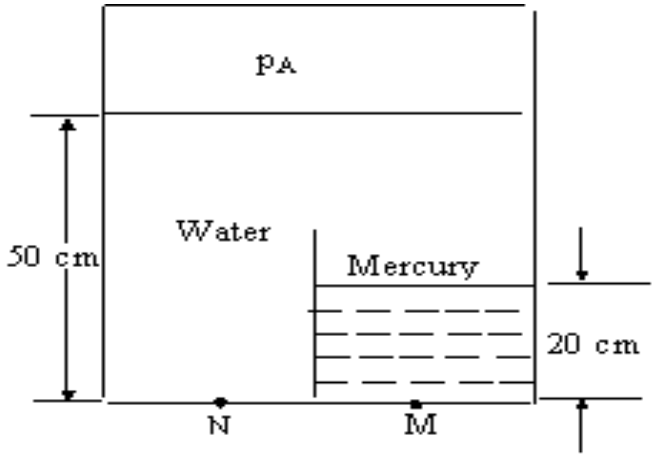
Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Can you distinguish between Newtonian and Non-newtonian fluids? what do you understand from the following fluid prpoerties? i) specific weight. ii) specific gravity. iii) viscosity. iv) surfac tension.	CO1	7 Marks
	b)	A plate having size 100 x 100mm is pulled with velocity of 0.05m/s over a fixed plate at distance of 0.25mm. Find: (i) force. (ii) power to maintain velocity if fluid has μ = 1 poise.	CO2	7 Marks

(OR)

2	a)	For the system shown in figure, determine the air pressure **PA** which will make the pressure at **N** one fourth of that at **M**.	CO2	7 Marks



	b)	How would you classify manometers? Explain differential manometer.	CO1	7 Marks

UNIT-II

3	a)	Distinguish between stream lines, streak lines and path lines. For a flow in the xy plane, the 'y' component of velocity is given by $v = y^2 - 2x - 2y$. Determine a possible 'x' component for a steady, incompressible flow, how many possible 'x' components are there.	CO2	7 Marks
	b)	Develop the Euler's equation of motion and then derive Bernoulli's equation. List all some practical applications.	CO2	7 Marks

(OR)

4	a)	State and derive continuity equation for one dimensional incompressible fluid and also compressible fluid.	CO2	7 Marks
	b)	A venturimeter is used for measuring the flow of petrol in a pipe line inclined at 35^0 to horizontal. The specific gravity of the petrol is 0.81 and the area of inlet to throat ratio is 4. If the difference in mercury levels in the gauge is 50mm, calculate the flow in liters per hour if the pipe diameter is 0.3m. Take coefficient of discharge of the venture meter as 0.975.	CO4	7 Marks

UNIT-III

5	a)	Derive an expression for the head loss due to sudden contraction in pipe flow. A pipe line 2000m long is used for power transmission. 110kW is to be transmitted through the pipe in which water having a pressure of 5000kN/m^2 at inlet is flowing. If the pressure drop over the length of the pipe is 1000kN/m^2 and co-efficient of friction is 0.0065, estimate: i) the diameter of the pipe. ii) efficiency of the transmission.	CO2	7 Marks
	b)	A jet of water of diameter 60mm moving with a velocity of 40m/s, strikes a curved fixed plate tangentially at one end at an angle of 30^0 to horizontal. The jet leaves the plate at an angle of 20^0 to the horizontal. Find the force exerted by the jet on the plate in the horizontal and vertical directions.	CO2	7 Marks

(OR)

6	a)	A compound piping system consists of 1800m of 0.50m, 1200m of 0.40m and 600m of 0.30m new cast iron pipes connected in series. Convert the system to (i) an equivalent length of 0.40m pipe, and (ii) equivalent size pipe 3600m long.	CO4	7 Marks
	b)	A jet of water 50mm in diameter having a velocity of 20m/s, strikes normally a flat smooth plate. Determine the thrust on the plate. i) if the plate is at rest. ii) if the plate is moving in the same direction as the jet with a velocity of 8m/s. Also find the work done per second on the plate and the efficiency of the jet when the plate is moving.	CO2	7 Marks

UNIT-IV

7	a)	Describe the working principles of Pelton wheel, Francis turbine and Kaplan turbine.	CO3	7 Marks
	b)	A pelton wheel is revolving at a speed of 190 r.p.m and develops 5150kW. When working under a head of 220m with an overall efficiency of 80%. Determine unit speed, unit discharge and unit power. The speed ratio for the turbine is given as 0.47. Find the speed, discharge and power, when the turbine is working under a head of 140m.	CO5	7 Marks

(OR)

8	a)	A Francis turbine has a diameter of 1.4m and rotates at 430 r.p.m. Water enters the runner without shock with a flow velocity of 9.5m/s and leaves the runner without whirl with an absolute velocity of 7m/s. The difference between the sum of the static and potential heads at entrance to the runner and at the exit from the runner is 62m. The turbine develops 12.25MW. The flow rate through the turbine is 12m^3/s for a net head of 115m.	CO5	7 Marks
	b)	Describe performance characteristics of different turbines.	CO5	7 Marks

UNIT-V

9	a)	Derive an expression for the work done by the impeller of a centrifugal pump on liquid per second per unit weight of lquid.	CO6	7 Marks
	b)	A double acting reciprocating pump, running at 40 r.p.m, is discharging 1.0m^3 of water per minute. The pump as a stroke of 400mm, the diameter of the piston is 200mm, the delivery and suction head are 20m and 5m respectively. Find the slip of the pump and power required to drive the pump.	CO3	7 Marks

(OR)

10 a) Describe multistage pumps with: CO6 7 Marks

i) impeller in series.

ii) impellers in parallel.

b) A single acting reciprocating pump, running at 50 r.p.m, deliver $0.01m^3$/sec of water. The diameter of the piston is 200mm and stroke length 400mm. Determine: CO3 7 Marks

i) the theoretical discharge of the pump.

ii) coefficient of discharge.

iii) slip and percentage slip of the pump.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

MACHINE TOOLS AND MODERN MACHINING PROCESSES

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the nomenclature of single point cutting tool in ORS system using a neat sketch	CO6	7 Marks
	b)	Write short notes on the following. i) Built up edge formation. ii) Taylor's tool life equation.	CO7	7 Marks
		(OR)		
2	a)	Differentiate between orthogonal and oblique cutting.	CO4	5 Marks
	b)	Describe various types of chips formed in metal cutting operation.	CO4	5 Marks
	c)	What are the properties required for a good cutting tool material?	CO4	4 Marks

UNIT-II

3	a)	Explain the types of lathes and their application.	CO1	7 Marks
	b)	Describe tail stock set over method of taper turning.	CO1	7 Marks
		(OR)		
4	a)	How do you specify a lathe?	CO1	5 Marks
	b)	Discuss about various types of chucks used in lathe.	CO1	7 Marks
	c)	What is depth of cut? How depth of cut is specified in lathe?	CO1	2 Marks

UNIT-III

5	a)	Describe the working principle and principal parts of slotting machine.	CO1	7 Marks
	b)	Give the classification of shapers and explain.	CO1	7 Marks
		(OR)		
6	a)	Explain the principle of operation and main parts of jig boring machine.	CO1	7 Marks
	b)	Give the classification of drilling machines in detail.	CO1	7 Marks

UNIT-IV

7	a)	Explain the principle of operation of centre less grinding machine using a neat sketch.	CO1	7 Marks
	b)	What is indexing? Discuss differential indexing procedure.	CO1	7 Marks
		(OR)		
8	a)	How a grinding wheel is specified?	CO1	7 Marks
	b)	Differentiate between up milling and down milling processes.	CO1	7 Marks

UNIT-V

9	a)	Describe the principle of operation of EDM.	CO5	7 Marks
	b)	State the advantages, disadvantages and applications of LBM.	CO5	7 Marks
		(OR)		
10	a)	Explain the principle of operation of ECM.	CO5	7 Marks
	b)	What is PAM? Explain.	CO5	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

THERMAL ENGINEERING - I

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the working principle of four stroke I.C. engine along with the valve timing diagram.	CO1	7 Marks
	b)	Briefly explain: i) Time loss factor. ii) Heat loss factor.	CO1	7 Marks
		(OR)		
2	a)	Compare the relative advantages and disadvantages of four stroke and two stroke engines.	CO1	7 Marks
	b)	List the important reciprocating engine parts and explain in detail.	CO1	7 Marks

UNIT-II

3	a)	What are different stages of combustion in S.I. engine? Explain with p-o diagram.	CO2	7 Marks
	b)	Explain the influence of different operating parameters on ignition delay during combustion process in S.I. engine.	CO2	7 Marks
		(OR)		
4	a)	What are the reasons for abnormal combustion of C.I. engine? Explain.	CO2	7 Marks
	b)	How do you rate the fuels used in S.I. engine? Explain their combustion characteristics.	CO1	7 Marks

UNIT-III

5	a)	List the parameters by which performance of an engine is evaluated.	CO2	7 Marks
	b)	A four stroke four cylinder gasoline engine has a bore of 60mm and a stroke of 100mm. On test it develops a torque of 66.5Nm, when running at 3000 r.p.m. If the clearance volume in each cylinder is 60cc the relative efficiency with respect to brake thermal efficiency is 0.5 and the calorific value of the fuel is 42MJ/kg, Determine the fuel consumption in kg/hr and the brake mean effective pressure.	CO3	7 Marks
		(OR)		
6	a)	Explain the significance of the following tests: i) Motoring test. ii) Morse test. iii) Retardation test.	CO2	7 Marks
	b)	Explain a various fuel measuring in devices with neat diagrams.	CO1	7 Marks

UNIT-IV

7	a)	Write a short note on excess air and adiabatic flame temperature.	CO1	7 Marks
	b)	The composition of sample of anthracite coal was found to be: C=91% H_2=3% O_2=2% N_2=0.8% S=8.8% and remainder ash. Calculate H.C.L. and L.C.V. of the fuel.	CO3	7 Marks
		(OR)		

8	a)	What do you mean by the stoichiometric Air-Fuel (A/F) ratio and enthalpy of formation?	CO1	7 Marks
	b)	A fuel contains 86 percent carbon and 14 percent hydrogen. Determine H.C.V, if 1kg of carbon burns to CO_2 will produce 33800kJ/kg and hydrogen burning to produce 142000kJ/kg.	CO3	7 Marks

UNIT-V

9	a)	Derive the equation for shaft work for single stage air compressor with clearance.	CO1	7 Marks
	b)	A two stage air compressor with complete intercooling delivers air to the mains at a pressure of 30 bar, the suction condition being 1 bar and 27^0C. If both cylinders have same stroke, find the ratio of cylinder diameters for the efficiency of compressor to be maximum. Assume the index of compression to be 1.3.	CO3	7 Marks

(OR)

10	a)	A centrifugal compressor handles 150kg/min of air. The suction pressure and temperature are 1 bar and 20^0C. The suction velocity is 80m/s. After compression in impeller the conditions are 1.5 bar and 70^0C and 220m/s. Determine: i) Isentropic efficiency. ii) Power required to derive the compressor.	CO3	7 Marks
	b)	With a neat sketch, explain the working of axial flow compressor.	CO1	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

ANALOG COMMUNICATIONS

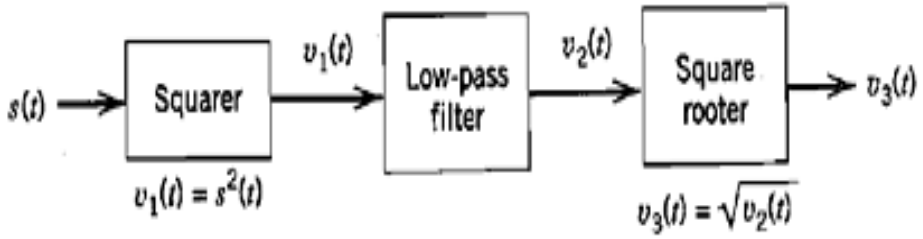
[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) The AM signal $s(t)=A_c[1 + k_a m(t)] \cos(2\pi f_c t)$ is applied to the system shown below. Assuming that $|k_a m(t)|<1$ for all t and the message signal m(t) is limited to the interval $-\omega \le f \le \omega$ and that the carrier frequency $f_c > 2\omega$. Show that m(t) can be obtained from the square-rooter output $v_3(t)$. CO4 7 Marks



b) The AM wave $10(1 + 0.5 \cos(2\pi 500t) \times \cos(2\pi 10^6 t)$ is demodulated by an envelope detector. Find the time constant τ and the resistor if the capacitor used is 100 PF. CO4 7 Marks

(OR)

2 a) Bring out the merits and demerits of the generation of SSB-SC wave using phase discrimination method and explain the method. CO5 6 Marks

b) Consider a two stage product modulator with a BPF after each product modulator, where input signal consists of voice signal occupying the frequency band 0.3 to3.4 KHz. The two oscillator frequencies have values f_1=100 K Hz and f_2=10 MHz. Specify the following: CO4 8 Marks

i) Sidebands of SSB modulated wave appearing at BPF output.
ii) The pass bands of the two BPFs.

UNIT-II

3 a) An angle modulated signal is given by CO4 7 Marks
$s(t) = \cos [2\pi(2 \times 10^6 t + 30 \sin(150t) + 40 \cos(150t))]$.
Find the maximum phase and frequency deviations.

b) Derive the expression for bandwidth of FM. CO1 7 Marks

(OR)

4 Analyze in detail how you can derive the message signal from Frequency Modulated Wave by using PLL. CO1 14 Marks

UNIT-III

5 a) A tone of unit amplitude and frequency 600Hz is sent via FM. The FM receiver has been designed for message signals up to 1KHz. The maximum phase deviation produced by the tone is 5 radians. Show that $(SNR)_o$ = 31.3 dB, given that $\frac{A_C^2}{2N_0} = 10^5$. CO2 7 Marks

b) Explain the importance of pre-emphasis and de-emphasis and show that the figure of merit of FM is increased by using the pre-emphasis and de-emphasis circuit. CO2 7 Marks

(OR)

6	a)	Derive figure of merit of AM when it is affected by threshold effect.	CO2	7 Marks
	b)	In a laboratory experiment involving envelope detection, AM signal at the input to envelope detector, has a modulation index of 0.5 with carrier amplitude of 2V.m(t) is a tone signal of frequency 5 KHz and f_c>>5 KHz. If the two sided noise PSD at the detector input is 10^{-8} Watts/Hz, what is the expected $(SNR)_o$ of this scheme? By how many dB, this scheme is inferior to DSB-SC.	CO2	7 Marks

UNIT-IV

7	a)	Explain why we have to consider $f_{lo} = f_c + f_{IF}$.	CO6	7 Marks
	b)	Explain the need for AGC and explain different AGC's.	CO3	7 Marks
		(OR)		
8	a)	In a broadcast super heterodyne receiver having no RF amplifier, the loaded Q of the antenna coupling circuit is 100. If the IF is 455 KHz, calculate: i) The image frequency and its rejection ratio for tuning at 1000 KHz. ii) The image frequency and its rejection ratio for tuning at 25 MHz.	CO4	7 Marks
	b)	Explain FM transmitters.	CO3	7 Marks

UNIT-V

9	a)	Explain about TDM in detail.	CO1	7 Marks
	b)	Explain the methods for demodulation of PAM signals.	CO1	7 Marks
		(OR)		
10	a)	Explain the generation and demodulation of PPM signals.	CO1	7 Marks
	b)	Compare all analog pulse modulation systems.	CO1	7 Marks

CODE No.:16BT40402 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

DIGITAL IC APPLICATIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Briefly explain the concept of low voltage CMOS logic interfacing.	CO2	7 Marks
	b)	Draw the circuit diagram of two inputs NOR gate by using CMOS logic and explain its operation along with the truth table.	CO2	7 Marks
		(OR)		
2	a)	Draw the dynamic electrical behaviour of CMOS inverter and explain.	CO2	7 Marks
	b)	Design a TTL three state NAND gate and explain the operation with the help of a functional table.	CO1	7 Marks

UNIT-II

3	a)	What are data types available in Verilog HDL? Discuss them with necessary syntax and an example.	CO6	7 Marks
	b)	With an example, explain Blocking and Non-Blocking statements.	CO4	7 Marks
		(OR)		
4	a)	Using a CaseX statement, write Verilog code for an 8 to 3 Priority Encoder.	CO6	7 Marks
	b)	Explain the different levels of abstraction used for programming in Verilog.	CO4	7 Marks

UNIT-III

5	a)	Design a 4x4 combinational multiplier and write VHDL program in dataflow model.	CO3	8 Marks
	b)	Draw the diagram of Barrel shifter and explain its operation.	CO3	6 Marks
		(OR)		
6	a)	Write VHDL code which converts a fixed point number into a floating point number.	CO4	7 Marks
	b)	Design and explain Adder and Subtractor using IC 74X999.	CO3	7 Marks

UNIT-IV

7	a)	Draw the circuit diagram of Johnson counter and explain its operation in detail.	CO3	7 Marks
	b)	Design a conversion circuit to convert a D flipflop to JK flipflop. Write its behavioural model Verilog HDL program.	CO4	7 Marks
		(OR)		
8	a)	Design Mod-16 Synchronous counter using T flipflop.	CO3	7 Marks
	b)	Write a VHDL code for a 4-bit up/down counter with enable and reset.	CO3	7 Marks

UNIT-V

9	a)	Explain the internal architecture of a 128 x 1 ROM using two dimensional decoding.	CO4	7 Marks
	b)	List out the comparisons between PROM, EPROM and EEPROM.	CO1	7 Marks
		(OR)		
10	a)	Draw the internal structure of SDRAM and explain its Read and Write cycle timings.	CO1	7 Marks
	b)	Write short note on applications of FPGAs.	CO1	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

ELECTROMAGNETIC THEORY AND TRANSMISSION LINES

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	State Gauss's Law. Derive an expression for the electric flux density of a uniformly charged sphere (ρ_V c/m^3) of radius 'a'.	CO1	7 Marks
	b)	Given the potential V= (10 sinθ cosΦ) /r^2 . i) Find the electric flux density D at (2,π/2, 0). ii) Calculate the work done in moving a 10μc charge from A(1,30^0, 120^0) to B(4,90^0,60^0).	CO1	7 Marks

(OR)

2	a)	State Biot-Savart's law. Derive an expression for the magnetic field intensity of an infinite line charge.	CO1	7 Marks
	b)	A circular loop located on $x^2+y^2=9$, z=0 carries a direct current of 10A along a_Φ. Determine H at (0,0,4) and (0,0,-4).	CO1	7 Marks

UNIT-II

3	a)	What is inconsistency of Ampere's Law? Explain about modified form of Ampere's Law.	CO2	7 Marks
	b)	A medium is characterized by σ=0, μ=2μ$_0$ and ε=5ε$_0$. If H=2 cos(ωt-3y)a_z A/m. Find E.	CO2	7 Marks

(OR)

4	a)	Explain about dielectric–dielectric boundary conditions.	CO2	7 Marks
	b)	Two extensive homogeneous isotropic dielectrics meet on plane Z=0 for Z> 0, ε_{r1}=4 and for Z<0, ε_{r2}=3. A uniform electric field $E_1=5a_x - 2a_y + 3a_z$ KV/m exists for Z ≥ 0. Find (i) E_2 for Z ≤ 0 (ii) the angles E_1 and E_2 make with interface.	CO2	7 Marks

UNIT-III

5	a)	Explain about wave propagation in good conductors and good dielectrics.	CO4	7 Marks
	b)	For an aluminum wire (σ = 3.82 x 10^7) having a diameter of 2.6mm, calculate the ratio of AC resistance to DC resistance at 2GHz.	CO4	7 Marks

(OR)

6	a)	Explain about reflection of a plane wave at normal incidence.	CO5	7 Marks
	b)	In a non magnetic medium, E = 4 sin (2π x 10^{7}t – 0.8x) a_x V/m. Find the time average power carried by the wave.	CO5	7 Marks

UNIT-IV

7	a)	Derive the expressions for characteristic impedance and propagation constant of a transmission line.	CO1	7 Marks
	b)	A certain transmission line of 2m long operating at ω = 10^6 rad/sec, has α= 8dB/m, β = 1 rad/m and z_0 = 60 + j40Ω. If the line is connected to a source of 10∠0^{0}V, Z_g=40Ω and terminated by a load of 20 + j50Ω, determine: i) the input impedance. ii) current at the middle of line.	CO1	7 Marks

(OR)

8	a)	Derive the expressions for voltage and current on a transmission line.	CO1	7 Marks
	b)	A 50Ω lossless line is 4.2m long. At the operating frequency of 300MHz, the input impedance at the middle of the line is 80 – j60Ω. Find the input impedance at the generator. Assume phase velocity is 2.4×10^8 m/sec.	CO1	7 Marks

UNIT-V

9	a)	What is a standing wave? Derive an expression for VSWR in terms of reflection coefficient.	CO6	7 Marks
	b)	A stub of length 0.12λ is used to match a 60Ω lossless line to a load. If the stub is located at 0.3λ from the load, calculate: i) the load impedance. ii) the standing wave ratio between the stub and load.	CO6	7 Marks

(OR)

10	a)	Discuss about different impedance matching techniques.	CO3	7 Marks
	b)	An 80Ω transmission line operating at 12MHz is terminated by a load Z_L. At 22m from the load, input impedance is 100-j120Ω. Assume phase velocity is 2.4×10^8m/sec. i) Find the reflection coefficient at load. ii) Find Z_L . iii) Find VSWR.	CO6	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

LINEAR IC APPLICATIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the block diagram of Op-Amp and describe the importance of level translator.	CO1	7 Marks
	b)	Write the ideal and practical characteristics of Op-Amp.	CO1	7 Marks
		(OR)		
2	a)	Explain the DC characteristics of Op-Amp.	CO2	7 Marks
	b)	For 741 Op-Amp, the parameters given are: i) $I_{CQ} = 10\mu A$ ii) $C_c = 33pf$. The input voltage $V_{pp}= 12V$. Calculate the slew rate and maximum possible frequency of input voltage that can be applied to get undistorted output.	CO1	7 Marks

UNIT-II

3	a)	Derive an expression for the output voltage of a practical Op-Amp integrator.	CO3	7 Marks
	b)	Design the practical differential circuit that will differentiate an input signal with $f_{max} = 150Hz$.	CO3	7 Marks
		(OR)		
4	a)	Explain the concept of precision rectifiers.	CO3	7 Marks
	b)	Describe the importance of Sample and Hold circuit.	CO3	7 Marks

UNIT-III

5	a)	Write a short note on different types of voltage regulators in detail.	CO4	7 Marks
	b)	Determine the range in which output voltage can be varied with help of LM317 regulator using R_1=820Ω and R_2=10KΩ potentiometer.	CO4	7 Marks
		(OR)		
6	a)	Design a Band pass filter with F_L=150Hz, F_h=10KHz. Assume the A_v=2.	CO1	7 Marks
	b)	Write about the characteristics of voltage regulators.	CO4	7 Marks

UNIT-IV

7	a)	Explain the functional diagram of 555 Timer.	CO1	7 Marks
	b)	Write a short note application of PLL.	CO4	7 Marks
		(OR)		
8	a)	Mention the important aspects regarding the PLL and derive the expression for lock range and capture range.	CO1	7 Marks
	b)	Design 555 timer for a square wave generator with 50% duty cycle.	CO4	7 Marks

UNIT-V

9	a)	Explain about R-2R ladder DAC.	CO1	7 Marks
	b)	Write about the specifications of DAC.	CO1	7 Marks
		(OR)		
10	a)	Elaborate the functioning of a successive approximation A/D converter.	CO1	7 Marks
	b)	Elaborate the concept of Dual Slope ADC.	CO1	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

PROBABILITY AND STOCHASTIC PROCESS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	A student buys 1000 integrated circuits (ICs) from supplier A, 2000 ICs from supplier B and 3000 ICs from supplier C. He tested the ICs and found that the conditional probability of an IC being defective depends on the supplier from whom it was bought. Specifically, given that an IC came from supplier A, the probability that it is defective is 0.05; given that an IC came from supplier B, the probability that it is defective is 0.10; and given that an IC came from supplier C, the probability that it is defective is 0.10. If the ICs from the three suppliers are mixed together and one is selected at random, what is the probability that it is defective? Given that a randomly selected IC is defective, what is the probability that it came from supplier A?	CO1	8 Marks
	b)	Two events A and B are such that P[A∩B] = 0.15, P[AUB] = 0.65 and P[A|B] = 0.5. Find P [B|A].	CO1	6 Marks

(OR)

2	a)	Define joint probability, conditional probability, mutually exclusive events with examples.	CO1	6 Marks
	b)	Let two honest coins, marked 1 and 2, be tossed together. The four possible outcomes are $T1T2$, $T1H2$, $H1T2$, $H1H2$ ($T1$ indicates toss of coin 1 resulting in tails; similarly $T2$ etc.). We shall treat that all these outcomes are equally likely; that is the probability of occurrence of any of these four outcomes is 1/4 (Treating each of these outcomes as an event, we find that these events are mutually exclusive and exhaustive). Let the event A be 'not $H1H2$' and B be the event 'match' (Match comprises the two outcomes $T1T2$, $H1H2$). Find $P(B\|A)$. Are A and B independent?	CO1	8 Marks

UNIT-II

3	a)	Let the random variable X denote the number of heads in three tosses of a fair coin. i) What is the PMF of X ? And sketch the PMF. ii) Sketch the CDF of X.	CO2	7 Marks
	b)	Find the expected value of the uniform density function.	CO2	7 Marks

(OR)

4	a)	A shopping cart contains ten books whose weights are as follows: There are four books with a weight of 1.8 lbs each, one book with a weight of 2 lbs, two books with a weight of 2.5 lbs each, and three books with a weight of 3.2 lbs each. i) What is the mean weight of the books? ii) What is the variance of the weights of the books?	CO2	7 Marks
	b)	State and prove the properties of characteristic function.	CO2	7 Marks

UNIT-III

5 a) Given two random variables X and Y with the joint CDF $FXY(x, y)$, marginal CDFs $FX(x)$ and $FY(y)$ respectively, compute the joint probability that X is greater than a and Y is greater than b. CO2 7 Marks

b) The joint PMF of two random variables X and Y is given by CO2 7 Marks

$$P_{XY}(x,y) = \begin{cases} \frac{1}{18}(2x+y) & x = 1,2; y = 1,2 \\ 0 & otherwise \end{cases}$$

i) What is the conditional PMF of Y given X?

ii) What is the conditional PMF of X given Y?

(OR)

6 a) The joint PDF of the random variables X and Y is defined as follows: CO2 7 Marks

$$f_{XY}(x,y) = \begin{cases} 25e^{-5y} & 0 < x < 0.2, y > 0 \\ 0 & otherwise \end{cases}$$

i) Find the marginal PDFs of X and Y.

ii) What is the covariance of X and Y ?

b) State and prove the properties of Co variance. CO2 7 Marks

UNIT-IV

7 a) Two random processes $X(t)$ and $Y(t)$ are defined as follows: CO3 7 Marks

$X(t) = A \cos(wt + \Theta)$

$Y(t) = B \sin(wt + \Theta)$

where A, B and w are constants and Θ is a random variable that is uniformly distributed between 0 and 2. Find the cross correlation function of $X(t)$ and $Y(t)$.

b) State and prove the properties of auto correlation. CO3 7 Marks

(OR)

8 a) A random process has sample functions of the form CO3 7 Marks

$$X(t) = A \cos(wt + \Theta)$$

where w is constant, A is a random variable that has a magnitude of +1 and −1 with equal probability, and Θ is a random variable that is uniformly distributed between 0 and 2π. Assume that the random variables A and Θ are independent.

b) If $Y_1(t)=X_1 \cos\omega t+X_2 \sin \omega t$ CO3 7 Marks

$Y_2(t)=X_1 \sin \omega t+X_2 \cos \omega t$

Where X_1 and X_2 are zero means independent random variables with unity variance. Show that the random processes $Y_1(t)$ and $Y_2(t)$ are individually **ωss** but not jointly WSS

UNIT-V

9 a) Classify noise and explain. CO1 7 Marks

b) Derive the noise figure is cascade amplifiers. CO3 7 Marks

(OR)

10 a) Obtain the expression for noise figure in terms of equivalent noise temperature for an amplifier CO3 7 Marks

b) Mention the differences between correlated and uncorrelated noise. CO1 7 Marks

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CODE No.:16BT40406 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

PULSE AND DIGITAL CIRCUITS

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

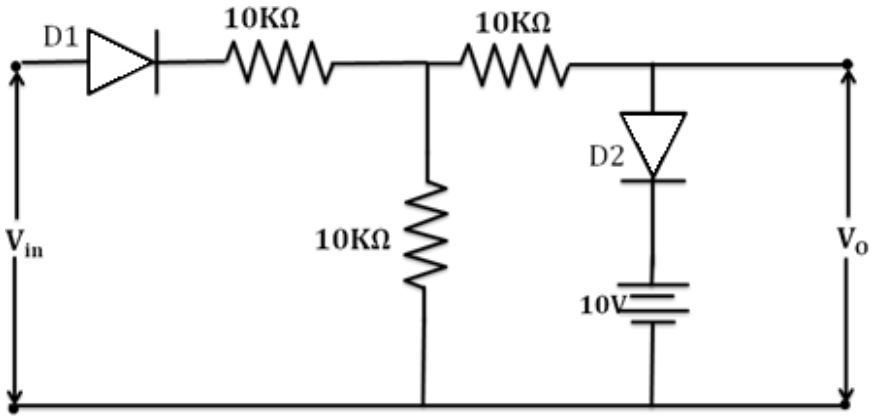
Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Prove that for any periodic input waveform the average level of the steady state output signal from RC high pass circuit is always zero.	CO1	6 Marks
	b)	A square wave whose peak-to-peak amplitude is 4V extends ±2V with respect to ground. The duration of the positive section is 0.1s and that of the negative section is 0.3s. If this waveform is impressed upon an RC integrating network whose time constant is 0.3s, what are the steady-state maximum and minimum values of the output waveform?	CO4	8 Marks
		(OR)		
2	a)	Find the rise time of the RC low pass circuit in terms of its circuit components.	CO2	6 Marks
	b)	The pulse from a high voltage generator rises linearly from 0.05μ sec, and then remains constant for 1μ sec. The rate of the rise of the pulse is measured with an RC differentiating circuit whose time constant is 250p sec. If the positive output voltage from the differentiator has a maximum value of 50V, what is the peak voltage of the generator.	CO4	8 Marks

UNIT-II

3	a)	With the help of neat circuit diagrams and waveforms, explain the working of positive and negative voltage clamping circuits.	CO1	8 Marks
	b)	Design a diode clamper circuit to restore a **dc** level of -5V to an input signal of peak-to-peak value 15V, assume that the diode drop is 0.7V.	CO3	6 Marks
		(OR)		
4	a)	For the circuit diagram shown in figure plot V_o versus V_{in} indicating all intercepts, slopes and voltage levels. Also sketch if $V_{in}=20\sin\omega t$. Indicate all voltage levels.	CO4	8 Marks



	b)	Draw the circuit diagram of slicer circuit using Zener diodes and explain the operation with the help of its transfer characteristics.	CO1	6 Marks

UNIT-III

5	a)	The self-biased bistable multivibrator uses n-p-n silicon transistors with $h_{FF(min)} = 50$. The junction voltages and I_{CBO} may be neglected. Design the circuit subject to the condition $V_{CC} = 18V$, $R_1 = R_2$, $I_{C(max)} = 10mA$. The base current on ON transistor is twice the minimum base current and V_{BE} of the OFF transistor is equal to -1V.	CO3	8 Marks
	b)	With the help of circuit diagram and waveforms, explain the working of an astable multivibrator.	CO1	6 Marks
		(OR)		
6	a)	Design a collector-coupled monostable multivibrator with a gate width of 5ms using n-p-n silicon transistors.	CO3	8 Marks
	b)	With the help of neat diagrams, discuss the different methods of triggering a binary.	CO1	6 Marks

UNIT-IV

7	a)	Explain how UJT can be used as sweep generator. Derive an expression for frequency of oscillations.	CO2	8 Marks
	b)	With the help of circuit diagram and waveforms, explain the working of transistor bootstrap time-base generator.	CO1	6 Marks
		(OR)		
8	a)	With a neat circuit diagram, explain the operation of exponential sweep circuit and prove that $e_s = 2e_t = 8e_d$.	CO2	6 Marks
	b)	In the transistor current time-base generator circuit, $V_{CC} = 20V$, $L = 200mH$, the yoke resistance $R_L = 20\Omega$, and $R_d = 200\Omega$. For a 500μsec sweep, draw the waveforms of i_L and V_{CE}, indicating voltage levels and time constants and calculate the slope error of the sweep.	CO4	8 Marks

UNIT-V

9	a)	Explain the working of Bi-directional diode sampling gate with relevant diagrams and derive expressions for A, $(Vc)_{min}$ and $(Vn)_{min}$.	CO1	8 Marks
	b)	What are the fundamental logic gates? Draw the logic symbols and their truth tables.	CO1	6 Marks
		(OR)		
10	a)	What are the applications of sampling gates? Explain any one application in detail.	CO1	8 Marks
	b)	Draw the circuit diagram of two-input TTL NAND gate circuit and explain its operation.	CO1	6 Marks

CODE No.:16BT40501 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

COMPUTER GRAPHICS

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Using midpoint ellipse algorithm, generate points on the ellipse with center as origin, major axis 8 units and minor axis 6 units.	CO3	10 Marks
	b)	Discuss about the operation of a delta-delta, shadow-mask CRT.	CO1	4 Marks
		(OR)		
2	a)	Explain various types of input devices in detail.	CO1	4 Marks
	b)	Differentiate between Bresenham's and DDA line drawing algorithms.	CO3	10 Marks

UNIT-II

3	a)	A pie chart is to be drawn with three sectors 50%, 30% and 20% respectively and they are to be filled with different colors. Develop an algorithm.	CO4	10 Marks
	b)	Write a short notes on Counting Number method or Inside Outside Test.	CO4	4 Marks
		(OR)		
4	a)	What are the 2D transformations? Explain all of them with necessary illustrations.	CO2	10 Marks
	b)	Compare and contrast Boundary fill and Flood fill algorithms.	CO4	4 Marks

UNIT-III

5	a)	Explain the process of generating curves using Hermite method.	CO1	6 Marks
	b)	Explain in detail about 2D viewing transformation pipeline with illustrations.	CO3	8 Marks
		(OR)		
6	a)	Derive the window-to-viewport transformation equations by first scaling the window to the size of the viewport and then translating the scaled window to the viewport position.	CO1	8 Marks
	b)	Differentiate between polygon surfaces and quadric surfaces.	CO3	6 Marks

UNIT-IV

7	a)	Discuss about viewing pipeline in 3D.	CO2	6 Marks
	b)	Derive the transformation matrix for scaling an object by scaling factor s in a direction defined by the directional angles α,β,γ.	CO2	8 Marks
		(OR)		
8	a)	Explain 3D Scaling and Reflection Transformations with an example.	CO2	6 Marks
	b)	Derive the necessary transformation matrices for parallel and perspective projections.	CO3	8 Marks

UNIT-V

9	a)	Explain Area subdivision and Octree methods with examples.	CO5	8 Marks
	b)	Define Rendering. Explain the stages of rendering in creating shadows.	CO5	6 Marks
		(OR)		
10	a)	Discuss BSP tree methods. How is it differ from area subdivision method?	CO5	8 Marks
	b)	Explain Gouraud shading technique with an example.	CO5	6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

DATABASE MANAGEMENT SYSTEMS

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain database ianguages in detail.	CO1	7 Marks
	b)	Describe Architecture, Users and Administrators of database.	CO1	7 Marks
		(OR)		
2	a)	Describe purpose of database systems and database system applications.	CO1	7 Marks
	b)	Explain conceptual design with ER model.	CO1	7 Marks

UNIT-II

3		How do views support logical data independence? How are views used for security? How are queries on views evaluated? Why does SQL restrict the class of views that can be updated? Explain with examples.	CO4	14 Marks
		(OR)		
4		Explain Tuple Relational and Domain Relational calculus in detail.	CO3	14 Marks

UNIT-III

5		Explain the differences between triggers and integrity constraints. Describe when you would use triggers over integrity constraints and vice versa.	CO4	14 Marks
		(OR)		
6		Explain Normal Forms in detail.	CO2	14 Marks

UNIT-IV

7		Describe Concurrent execution of Transactions in detail.	CO6	14 Marks
		(OR)		
8	a)	Explain Lock based protocols.	CO6	7 Marks
	b)	Describe deadlock handling with examples.	CO6	7 Marks

UNIT-V

9	a)	Illustrate Cluster Indexes with examples.	CO5	7 Marks
	b)	Describe any one Index data structure with figures.	CO5	7 Marks
		(OR)		
10	a)	Describe B+ Tree Bulk loading with relevant figures.	CO5	7 Marks
	b)	Explain Indexed sequential access method in detail.	CO5	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

INDUSTRIAL INSTRUMENTATION - I

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	How are springs used in balances? Describe how the capacity may be enhanced in spring balances.	CO1	7 Marks
	b)	Select an appropriate load cell based sensing mechanism for measurement of force that is a noncontact type. Justify your sensor selection and explain its principle using a neat sketch.	CO5	7 Marks
		(OR)		
2	a)	Analyze different torque sensors, summarize them and give 3 different units of Torque.	CO2	7 Marks
	b)	With a neat sketch, explain how the torque is measured using relative angular twist between two sections of a shaft.	CO1	7 Marks

UNIT-II

3	a)	Explain how speed is measured using drag cup type tachometer. Give few applications of Drag-cup tachometer.	CO1	7 Marks
	b)	Design a suitable method to measure acceleration using variable reluctance principle and mention its merits and demerits with applications.	CO3	7 Marks
		(OR)		
4	a)	Explain the DC and AC tachogenerator with diagram and mention its merits and demerits	CO1	7 Marks
	b)	Analyze single axis, two axis and three axis gyros, summarize them and give three different units of the quantity they measure.	CO2	7 Marks

UNIT-III

5	a)	Identify an appropriate sensor for measurement of vacuum. Justify your sensor selection and explain how it works with a neat sketch.	CO5	7 Marks
	b)	Analyze different pressure sensors, summarize them and give 3 different units of pressure.	CO2	7 Marks
		(OR)		
6	a)	Which instrument is used for calibrating high pressure gauges? Describe its construction and working a neat diagram.	CO2	7 Marks
	b)	Describe the basic principle, construction and working of Ionization gauge. Write its advantages and disadvantages, also mention its range.	CO1	7 Marks

UNIT-IV

7	a)	Analyze various sources of errors in filled in systems and explain how they are compensated.	CO2	7 Marks
	b)	A platinum thermometer has a resistance of 100Ω at 250C. i) Evaluate its resistance at 650C if the platinum has a resistance temperature co-efficient of 0.00392/ ^{0}C. ii) If the thermometer has a resistance of 150Ω, calculate the temperature.	CO4	7 Marks
		(OR)		
8	a)	Select an appropriate sensor for measurement of high range of temperatures while providing high linearity and accuracy. Justify your sensor selection and explain how this sensor works.	CO5	7 Marks
	b)	Write a short note on installation and protection of thermocouple.	CO1	7 Marks

UNIT-V

9	a)	Explain about calibrators and simulators for temperature sensors.	CO1	7 Marks
	b)	Identify an appropriate sensing mechanism to measure high temperature using brightness principle. Explain how this sensor works and mention its range, advantages and disadvantages.	CO5	7 Marks

(OR)

10	a)	Design a sensing mechanism to measure temperature using paramagnetic salts and explain its working.	CO3	7 Marks
	b)	Discuss in detail about pneumatic and suction pyrometers.	CO1	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

LINEAR AND DIGITAL ICS

[Electrical and Electronics Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	List out AC and DC characteristics of an Op-Amp.	CO1	6 Marks
	b)	Derive the closed loop voltage gain, input resistance, output resistance and bandwidth for an inverting amplifier with feedback arrangement.	CO1	8 Marks
		(OR)		
2	a)	What is a differential amplifier? Mention the classification of differential amplifier with neat diagrams.	CO2	8 Marks
	b)	Draw the schematic diagram of the basic Op-Amp. Explain the significance of virtual ground in basic inverting Op-Amp. How would you explain its existence?	CO2	6 Marks

UNIT-II

3	a)	What are the limitations of log amplifier and how to overcome those limitations? Explain in detail.	CO3	7 Marks
	b)	Draw the circuit of Zero crossing detector and explain its working with relevant wave forms.	CO2	7 Marks
		(OR)		
4	a)	Draw the Anti log Amplifiers circuit diagram and derive its output voltage in detail.	CO1	6 Marks
	b)	Design an Active first order Butterworth Low pass filter with a cut off frequency of 2kHz and pass band gain of 4.	CO3	8 Marks

UNIT-III

5	a)	Draw the circuit diagram of Monostable multivibrator by using IC 555 timer and explain its operation.	CO1	8 Marks
	b)	Explain the working of a Dual slope A/D converter.	CO1	6 Marks
		(OR)		
6	a)	With a neat functional diagram, explain the operation of VCO and also derive an expression for free running frequency f_0.	CO6	6 Marks
	b)	Explain the operation of R-2R ladder D/A converter with neat diagrams.	CO1	8 Marks

UNIT-IV

7	a)	Explain the terms transition time and propagation delay with reference to CMOS Logic.	CO1	6 Marks
	b)	Draw the circuit diagram of NAND gate by using CMOS logic and explain its operation along with truth table.	CO3	8 Marks
		(OR)		
8	a)	Draw the transfer characteristics of CMOS inverter and explain its operation.	CO3	6 Marks
	b)	Explain the concept of HDL based structural modeling.	CO5	8 Marks

UNIT-V

9	a)	Design a function $F = ABC + (A + B + C)'$ by using 74 x 138 and explain its operation.	CO3	7 Marks
	b)	Design a Ring counter and explain its operation.	CO1	7 Marks
		(OR)		
10	a)	Develop a verilog program for n-bit parallel adder.	CO1	7 Marks
	b)	Design a modulo-50 counter using 74 x 163 IC.	CO1	7 Marks

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CODE No.:16BT41041 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

COMPUTER ARCHITECTURE AND ORGANIZATION

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss in detail about interconnection structures.	CO1	7 Marks
	b)	Explain direct mapped cache organization in detail.	CO1	7 Marks
		(OR)		
2		What is cache memory? How its performance can be increased? Discuss in detail.	CO1	14 Marks

UNIT-II

3	a)	Briefly explain the evaluation of Microprocessors with fractures.	CO2	7 Marks
	b)	Explain the operation of Memory Read and Write with help of Timing diagram.	CO1	7 Marks
		(OR)		
4	a)	Explain about diverse types of Registers in 8085 in detail.	CO1	7 Marks
	b)	Discuss any four I/O and machine control instructions with an example.	CO2	7 Marks

UNIT-III

5	a)	Explain the interrupt process in 8085.	CO1	4 Marks
	B)	Suggest an arrangement to interface 2K x 4 size of a RAM to 8085 with the starting address at 4004H.	CO3	10 Marks
		(OR)		
6		Explain the operations of following instructions of 8085 microprocessor. i) PCHL. ii) DAA. iii) LHLD 8000H. iv) ADC M. v) RST 7. vi) RET. vii) MVI M, 42H.	CO1	14 Marks

UNIT-IV

7	a)	List out arithmetic and logical operations that can be performed by ALU.	CO2	7 Marks
	b)	Describe the operation of 4-bit adder-subtractor using full adder blocks.	CO2	7 Marks
		(OR)		
8		Explain: i) Machine instruction. ii) Micro Program. iii) Micro-instructions. iv) Micro-operations. v) Control word.	CO1	14 Marks

UNIT-V

9	a)	Explain in detail about micro instruction execution.	CO1	8 Marks
	b)	Hardwired control unit is faster than micro programmed control unit. Justify this statement.	CO1	6 Marks
		(OR)		
10		Illustrate the concept of pipelining and explain how it will improve the instruction execution speed.	CO2	14 Marks

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CODE No.:16BT41201 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

DESIGN AND ANALYSIS OF ALGORITHMS

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

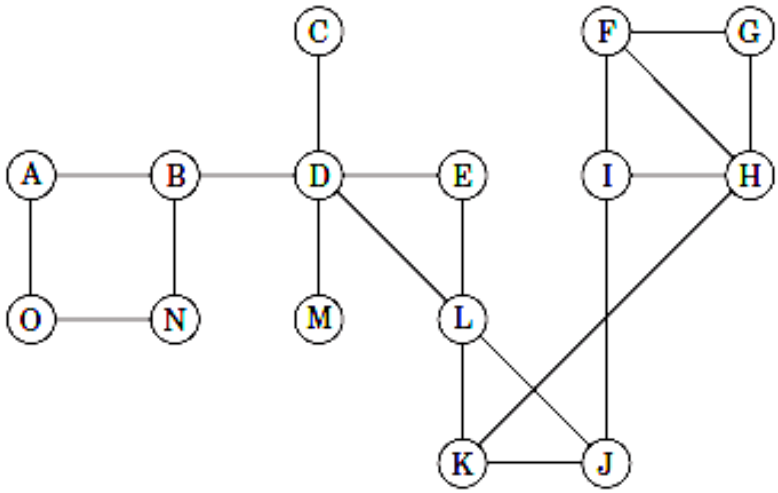
Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Elaborate on the time complexity of an algorithm.	CO1	8 Marks
	b)	What is a recursive algorithm? Write and explain a recursive algorithm for solving Towers of Hanoi puzzle.	CO3	6 Marks
		(OR)		
2	a)	Devise an algorithm that inputs three integers and outputs them in non-decreasing order. Illustrate how to determine it's time complexity using step count method.	CO2, CO3	9 Marks
	b)	Write short notes on space complexity of an algorithm.	CO1	5 Marks

UNIT-II

3	a)	Illustrate BFS algorithm.	CO1	7 Marks
	b)	What is a disjoint set? Describe its operations.	CO1	7 Marks
		(OR)		
4		Explain how to find the biconnected components of the following graph:	CO1	14 Marks

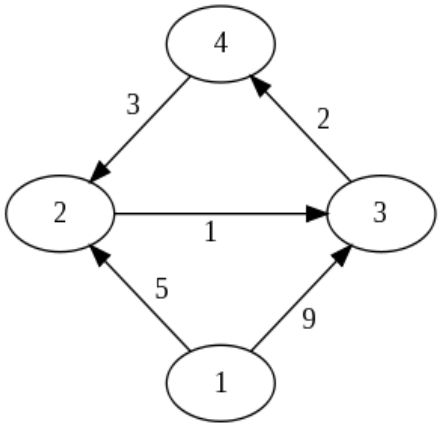


UNIT-III

5	a)	Write the recursive version of binary search and derive its complexity in Best and Average cases.	CO1, CO2, CO4	7 Marks
	b)	Elucidate Strassen's matrix multiplication.	CO1	7 Marks
		(OR)		
6	a)	Explain how to find the shortest paths from a single source in a given graph using a greedy algorithm.	CO1	7 Marks
	b)	Consider the following instance of the knapsack problem: n=6, m=16, weight (w1, w2, w3, w4, w5, w6) = (6, 10, 3, 5, 1, 3) and profit (p1, p2, p3, p4, p5, p6) = (6, 2, 1, 8, 3, 5). Solve the given knapsack problem by applying a greedy method.	CO1	7 Marks

UNIT-IV

7 a) Consider the following digraph. Find the lengths of shortest paths between all possible pairs of nodes in the graph using dynamic programming approach. CO5 7 Marks



b) Explain how to solve travelling sales person problem using dynamic programming. CO5 7 Marks

(OR)

8 What is 8-queens problem? Show how to solve it using backtracking. CO1 14 Marks

UNIT-V

9 Write short notes on the following: CO1 14 Marks

i) Dead node. ii) Live node.
iii) E-node. iv) Bounding function.

(OR)

10 Solve the following instance of Travelling Salesman problem using LC branch and bound technique. CO1 14 Marks

∞	7	3	12	8
3	∞	6	14	9
5	8	∞	6	18
9	3	5	∞	11
18	14	9	8	∞

CODE No.:16BT41202 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

JAVA PROGRAMMING

[Computer Science and Engineering, Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain different types of operators available in java.	CO1	7 Marks
	b)	Illustrate constructor overloading with example.	CO2	7 Marks
		(OR)		
2	a)	What is an array? How arrays are declared and initialized? Explain with examples.	CO1	7 Marks
	b)	Define class and object. Explain how to access class members in java	CO2	7 Marks

UNIT-II

3	a)	What is the use of "Final" Keyword in java? Explain.	CO2	4 Marks
	b)	What is inheritance? Explain different forms of inheritance in java.	CO1	10 Marks
		(OR)		
4	a)	Explain Creating Packages and Accessing a Package with examples.	CO2	8 Marks
	b)	What are abstract classes? How they are different from normal classes? Explain.	CO1	6 Marks

UNIT-III

5	a)	What is thread? Explain different ways of creating threads in java with examples.	CO1	7 Marks
	b)	List some of the most common types of exceptions that might occur in java.	CO1	7 Marks
		(OR)		
6	a)	How to handle multiple catch blocks for a nested try block? Explain with an example.	CO2	7 Marks
	b)	Write a java program to implement producer consumer problem.	CO3	7 Marks

UNIT-IV

7	a)	With an example, explain how to create and run an applet program in java.	CO4	7 Marks
	b)	What is the significance of layout managers? Discuss briefly various layout managers.	CO4	7 Marks
		(OR)		
8	a)	What is an applet? Explain different types of applets in java.	CO4	7 Marks
	b)	Explain EnumSet Class with an example.	CO4	7 Marks

UNIT-V

9	a)	What is the role of event listeners in event handling? List the Java event listeners.	CO5	7 Marks
	b)	Describe the simple **html** file to pass the parameter to servlet and display the parameter values accepted by servlet.	CO5	7 Marks
		(OR)		
10	a)	List and explain core classes and interfaces that are provided in *Javax.Servlet.package*.	CO5	8 Marks
	b)	Discuss about different event classes.	CO1	6 Marks

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CODE No.:16BT41203 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

SOFTWARE ENGINEERING

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I		
1	a)	Explain which application is more suitable for prescriptive process model along with the features of prescriptive process models.	CO1, CO2	7 Marks
	b)	What is Agility? List out the Human factors that effects the agile process.	CO1	7 Marks
		(OR)		
2	a)	Explain different software myths with respect to management, customer and practitioner with neat case studies.	CO1	7 Marks
	b)	What Unified Process? Explain the phases of the Unified Process.	CO1	7 Marks
		UNIT-II		
3	a)	What is a Use-Case? Explain how to develop use-cases for making a withdrawal at an ATM.	CO2, CO4	7 Marks
	b)	Explain steps in requirement engineering process.	CO2	7 Marks
		(OR)		
4	a)	What is Data Flow Model? Create a data flow model for online shopping.	CO2, CO4	7 Marks
	b)	Differentiate between functional and non functional requirements of the software with an example.	CO2	7 Marks
		UNIT-III		
5	a)	Explain the measures for software quality and how to remove defect efficiency.	CO4	7 Marks
	b)	Write in detail about design concepts.	CO3	7 Marks
		(OR)		
6		Explain the following: i) Quality characteristics. ii) Quality guidelines. iii) Quality attributes.	CO3	14 Marks
		UNIT-IV		
7	a)	Why software testing is so important? List and explain the test strategies for object oriented software.	CO5	7 Marks
	b)	Explain control structure testing. What are the different testing techniques involved in it?	CO5	7 Marks
		(OR)		
8	a)	Discuss the software testing fundamentals. Narrate the advantages and disadvantages of the black box and white box testing.	CO5	7 Marks
	b)	What is debugging? Explain the process of debugging.	CO5	7 Marks
		UNIT-V		
9	a)	What is RMMM? Explain in detail about RMMM plan.	CO6	7 Marks
	b)	Explain the process of formal technical reviews.	CO6	7 Marks
		(OR)		
10	a)	Explain in detail about BRP model.	CO6	7 Marks
	b)	What is software reengineering? Explain software reengineering process model.	CO6	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

THEORY OF COMPUTATION

[Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Explain the closure properties of NFA. CO1 7 Marks

b) Given an Epsilon NFA transition table or transition diagram, task is to convert the ∈ - NFA to NFA. CO1 7 Marks

Transition Table:

	∈	a	b	c
→ p	{ q, r }	∅	{ q }	{ r }
q	∅	{ p }	{ r }	{ p,q }
* r	∅	∅	∅	∅

(OR)

2 a) What are the differences between Mealy Machine and Moore Machine? CO1 7 Marks

b) Let us consider the following Moore machine. CO2 7 Marks

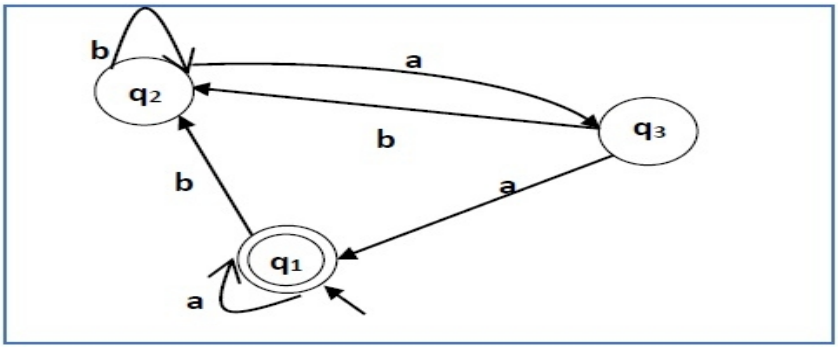
Present State	Next State		Output
	a = 0	a = 1	
→a	d	b	1
b	a	d	0
c	b	c	0
d	c	a	1

Convert it to Mealy Machine.

UNIT-II

3 a) Explain the identities related to regular expressions. CO2 7 Marks

b) Construct a regular expression corresponding to the automata given below. CO2 7 Marks



(OR)

4 a) Convert the following RA into its equivalent DFA – 1 (0 + 1)* 0. CO2 7 Marks

b) Show that the given language is not regular. CO2 7 Marks

$L = \{a^n b^n c^n \mid n \geq 1\}$.

UNIT-III

5 a) Let a *CFG* {*N, T, P, S*} be $N = \{S\}$, $T = \{a, b\}$, CO3 7 Marks
Starting symbol = *S*, $P = S \rightarrow SS \mid aSb \mid \varepsilon$.
Define Leftmost derivation from the above CFG is "*abaabb*".

b) Check whether the grammar G with production rules : CO3 7 Marks
$X \rightarrow X + X \mid X * X \mid X \mid a$ is ambiguous or not.

(OR)

6	a)	Find a reduced grammar equivalent to the grammar G, having production rules, $P : S \rightarrow AC \mid B, A \rightarrow a, C \rightarrow c \mid BC, E \rightarrow aA \mid e$.	CO3	7 Marks
	b)	Convert the following CFG into CNF. $S \rightarrow ASA \mid aB, A \rightarrow B \mid S, B \rightarrow b \mid \varepsilon$.	CO3	7 Marks

UNIT-IV

7	a)	Define PDA. Explain briefly with neat sketch.	CO4	7 Marks
	b)	Construct a PDA that accepts $L = \{ ww^R \mid w = (a + b)^* \}$.	CO4	7 Marks

(OR)

8	a)	Write an algorithm to find CFG corresponding to a given PDA.	CO4	7 Marks
	b)	Design a top-down parser for the expression "$x + y * z$" for the grammar G with the following production rules – $P: S \rightarrow S + X \mid X, X \rightarrow X * Y \mid Y, Y \rightarrow (S) \mid id$.	CO4	7 Marks

UNIT-V

9	a)	Write a short note on the model of Turing Machine (TM).	CO5	7 Marks
	b)	Design a Turing Machine that reads a string representing a binary number and erases all leading 0's in the string. However, if the string comprises of only 0's, it keeps one 0.	CO5	7 Marks

(OR)

10	a)	What is Universal Turing Machine? Explain it.	CO5	7 Marks
	b)	Explain the Linear Bounded Turing Machine.	CO5	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

CONTROL SYSTEMS

[Electronics and Instrumentation Engineering]

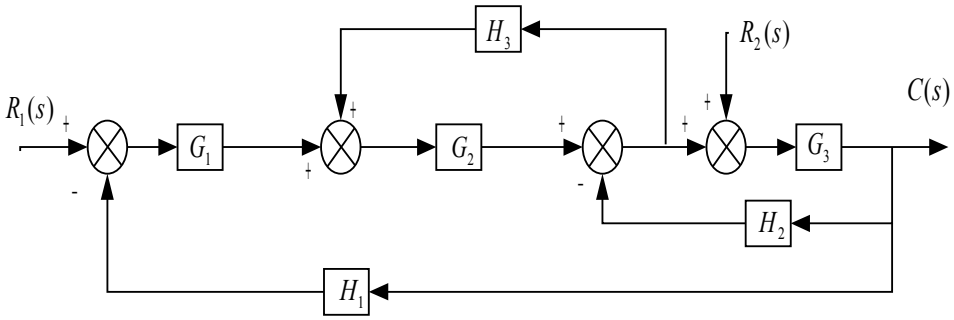
Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

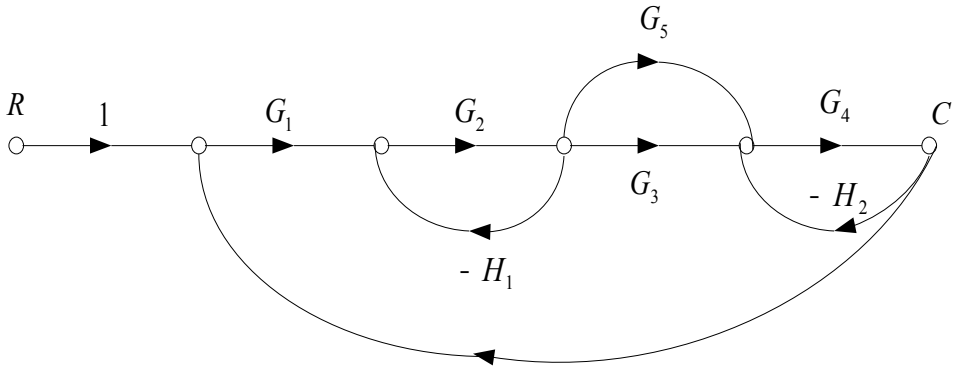
1 a) Describe the types of control systems with advantages and disadvantages. CO1 7 Marks

b) Obtain the expression C(s)/R1(s) of the system shown in figure. CO4 7 Marks



(OR)

2 Draw block diagram of the signal flow graph shown below. Find over all transfer function by block diagram reduction technique. Verify the results by applying mason's gain formula. CO4 14 Marks



UNIT-II

3 a) Sketch the root locus diagram for the following open loop transfer function: CO2 10 Marks

$$\frac{K}{S(S+4)(S^2+4S+20)}$$

b) Explain about the various test signals. CO2 4 Marks

(OR)

4 a) A unity feedback system has an open-loop transfer function $G(S)=\frac{K}{S(S+10)}$. Determine K so that the system will have a damping ratio 0.5. For this value of K, determine peak over shoot and time for peak over shoot for the unit step input. CO2 7 Marks

b) Define the error constants K_p, K_v and K_a. CO2 7 Marks

UNIT-III

5 Sketch the Bode plot for the following transfer function and determine the system gain K for the gain crossover frequency to be 5 rad/sec. CO5 14 Marks

$$G(S) = \frac{Ke^{-0.1S}}{S(1+S)(1+0.1S)}$$

(OR)

6 Sketch the polar plot for the transfer function $G(S) = \frac{10}{S(S+1)(S+2)}$. Find its gain margin and phase margin. CO5 14 Marks

UNIT-IV

7 a) What are the types of controllers? Mention the effect of P, PI on controllers. CO1 7 Marks

b) Explain the effect of the PD controller on time response characteristics. CO1 7 Marks

(OR)

8 A unity feed back system has an open-loop transfer function of $G(S) = \frac{4}{S(2S+1)}$. CO3 14 Marks

It is desired to obtain a phase margin of 40^0 without sacrificing the K_P of the system. Design a suitable lag-network and compute the value of network components assuming any suitable impedance level.

UNIT-V

9 a) Describe the solution of state equations. CO1 7 Marks

b) A system is characterized by the following state space equations. CO4 7 Marks

$$\begin{bmatrix} \dot{X}_1 \\ \dot{X}_2 \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 1 & 1 \end{bmatrix} \begin{bmatrix} X_1 \\ X_2 \end{bmatrix} + \begin{bmatrix} 0 \\ 1 \end{bmatrix} u; t > 0.$$

Compute the state transition matrix.

(OR)

10 a) What are the properties of the state transition matrix? CO1 7 Marks

b) Derive transfer function to state model. CO1 7 Marks

CODE No.:16BT51202 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations May - 2019

OBJECT ORIENTED ANALYSIS AND DESIGN

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the principles of modeling? Explain.	CO1	6 Marks
	b)	Explain how to model the requirements of a given system.	CO2	8 Marks
		(OR)		
2	a)	What is the difference between CRS and SRS?	CO2	5 Marks
	b)	Explain different phases in SDLC.	CO1	9 Marks

UNIT-II

3	a)	Explain object diagram with suitable example.	CO1	7 Marks
	b)	Represent an abstract class and interface UML with diagram.	CO2	7 Marks
		(OR)		
4	a)	Explain the terms generalization and specialization.	CO2	6 Marks
	b)	What are the different types of relationship compositions?	CO2	4 Marks
	c)	What is use case diagram?	CO1	4 Marks

UNIT-III

5	a)	Explain about use cases and actors and use cases and flow of events.	CO3	7 Marks
	b)	Design the behavioral model with example.	CO3	7 Marks
		(OR)		
6	a)	Explain forward and reverse engineering.	CO1	7 Marks
	b)	Model Class diagram for "ATM System".	CO3	7 Marks

UNIT-IV

7	a)	Define and explain Modeling in UML and it's advantages.	CO4	8 Marks
	b)	Explain the terms Time and Space in modeling.	CO4	6 Marks
		(OR)		
8		Explain signals and events in Advanced Behavioral Modeling with diagrams.	CO4	14 Marks

UNIT-V

9	a)	What is Component diagram in UML?	CO5	7 Marks
	b)	What is the difference between a State diagram and a Flowchart?	CO5	7 Marks
		(OR)		
10	a)	Construct Component diagram for online shopping.	CO5	8 Marks
	b)	What are the parts of a Deployment diagram?	CO5	6 Marks

CODE No.: 16BT3HS01 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

ENVIRONMENTAL STUDIES

[Civil Engineering, Mechanical Engineering, Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Compare renewable and non-renewable resources. Give examples	CO2	7 Marks
	b)	Why is it necessary to create environmental awareness?	CO4	7 Marks
		(OR)		
2	a)	List the merits and demerits of wind energy.	CO2	7 Marks
	b)	What are the major causes for mining? Give solution to solve this problem.	CO4	7 Marks

UNIT-II

3	a)	What are the biotic and abiotic components of an ecosystem?	CO1	7 Marks
	b)	How can you as an individual conserve biodiversity	CO7	7 Marks
		(OR)		
4	a)	Role of biodiversity in addressing new millennium challenges.	CO4	7 Marks
	b)	What is meant by alpha, beta and gamma richness? Discuss giving examples.	CO1	7 Marks

UNIT-III

5		Examine the characteristics of hazardous and non-hazardous waste and explain the ill effects of hazardous waste how do you manage them.	CO3	14 Marks
		(OR)		
6	a)	State, how does acid rain is formed and what are the adverse effects on environment.	CO2	7 Marks
	b)	Enumerate the techniques to manage the surface and ground water resources.	CO5	7 Marks

UNIT-IV

7	a)	"Population, consumerism and waste production are interrelated". Comment.	CO2	7 Marks
	b)	Which are the agents responsible for ozone depletion?	CO1	7 Marks
		(OR)		
8		Discuss the silent features of Forest (Conservation) Act and water (Prevention and Control of Pollution) Act.	CO8	14 Marks

UNIT-V

9	a)	Discuss about role of information technology in environment and human health.	CO1	7 Marks
	b)	What will be the impact, when many migrants come into the city.	CO6	7 Marks
		(OR)		
10		Visit to a local industrial polluted area and prepare a document.	CO9	14 Marks

CODE No.: 16BT30401 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

ELECTRONIC CIRCUIT ANALYSIS AND DESIGN

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Outline the classification of BJT amplifiers.	CO2	7 Marks
	b)	Apply Bootstrapping method for a Darlington amplifier to increase input impedance.	CO6	7 Marks
		(OR)		
2	a)	Outline different types of coupling schemes used in multistage amplifiers.	CO2	7 Marks
	b)	Apply the concept of cascading to design Multi stage Amplifier with block diagram.	CO6	7 Marks

UNIT-II

3	a)	Derive the expressions for hybrid π resistances $\mathbf{r_{ce}}$ and $\mathbf{r_{bb'}}$ of a transistor.	CO3	7 Marks
	b)	Apply short circuit concept in a CE amplifier to derive current gain equation.	CO6	7 Marks
		(OR)		
4	a)	Discuss about the Low and High frequency response of an Amplifier.	CO3	7 Marks
	b)	For a given CE amplifier Compute g_m and $g_{b'e}$ by considering β = 100, Ic = 5mA, Vce = 10V, hie = 800Ω, hoe = 10^{-4}, re = 10^{-4}. Assume f_T = 50MHz and C_{ob} = 3pF.	CO4	7 Marks

UNIT-III

5	a)	Draw the Hartley oscillator with BJT, explain its operation and derive an expression for frequency of oscillations.	CO1	7 Marks
	b)	Select a Trans-conductance amplifier and prove its input and output impedances are very large compared to CE amplifier.	CO3	7 Marks
		(OR)		
6	a)	Select a Trans-Resistance amplifier and prove its input and output impedances are very large compared to CE amplifier.	CO5	7 Marks
	b)	Draw the RC phase shift oscillator circuit with BJT and explain its operation.	CO1	7 Marks

UNIT-IV

7	a)	For a class B power amplifier, show that the efficiency is 78.5%.	CO3	8 Marks
	b)	Write short notes on distortion phenomenon occurance in power amplifiers.	CO1	6 Marks
		(OR)		
8	a)	What is the minimum possible value of V_{cc} for a Push pull amplifier utilizes a transformer whose primary has a total of 200 turns and whose secondary has 50 turns? It must be capable of delivering 40W to an 8Ω load under maximum power conditions.	CO4	7 Marks
	b)	With neat circuit diagram, explain the principal of operation of class A series fed power amplifier	CO1	7 Marks

UNIT-V

9	a)	Design a single tuned amplifier for the following specifications. Centre frequency of 400KHz and a Band width of 10KHz. Assume the transistor parameters g_m = 0.04S, h_{fe} = 100, $C_{b'e}$ = 1000pF, $C_{b'c}$ = 100pF. The bias network and input resistance are adjusted such that R_i = 4KΩ and R_L= 510Ω.	CO3	7 Marks
	b)	Derive the expressions for Bandwidth and Q-factor of single tuned, capacitive coupled amplifiers. List the assumptions made for the derivation.	CO4	7 Marks
		(OR)		
10	a)	Discuss the issue of stability in Tuned Amplifiers.	CO1	7 Marks
	b)	A class C amplifier has a base bias voltage of -5V and V_{cc} = 30V. It is determined that a peak input voltage of 9.8V at 1MHz is required to derive the transistor to its saturation current of 1.8 A.	CO4	7 Marks

CODE No.: 16BT30402 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

SIGNALS AND SYSTEMS

[Electronics and Instrumentation Engineering]

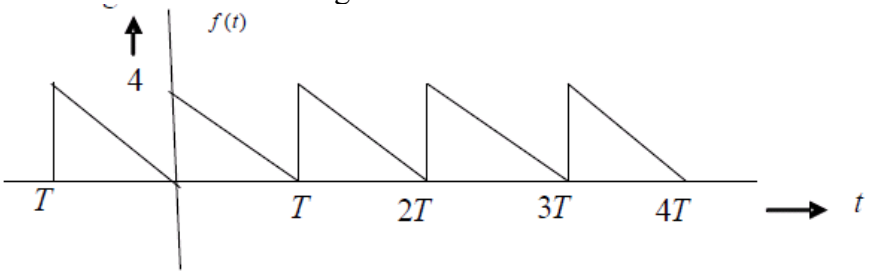
Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Find which of the following signals are causal or non – causal: i) $x(t) = e^{2t}\,u(t-1)$. ii) $x(t) = \cos 2t$. iii) $x(t) = 2\,u(-t)$. iv) $x(n) = u(-n)$. v) $x(n) = u(n+4) - u(n-2)$.	CO2	6 Marks
	b)	Define LTI system. What are its properties? Derive an expression for the transfer function of LTI system.	CO1	8 Marks
		(OR)		
2	a)	Define the following Elementary signals i) Real Exponential Signal ii) Continuous time version of a sinusoidal signal	CO1	7 Marks
	b)	Consider the system below X(t) → System → y(t)=3*x(2t-T) If the signal $x(t)$ has an energy E then what is the energy of y(t) signal.	CO2	7 Marks

UNIT-II

3	a)	By applying appropriate technique, express the following signal as a function of cosine and sine signals. 	CO5	8 Marks
	b)	With regard to Fourier series representation justify the following statements: i) Odd functions have only sine terms. ii) Functions with half wave symmetry have only odd harmonics. iii) Even functions have no sine terms.	CO2	6 Marks
		(OR)		
4	a)	By using suitable technique express the time domain signal in frequency domain. i) double sided exponential signal ii) $\Delta(t) = \begin{cases} 1 - \frac{2\lvert t\rvert}{\tau} & for\ t < \tau \\ 0 & elsewhere \end{cases}$	CO5	7 Marks
	b)	State and prove the i) Modulation theorem of Fourier Transforms. ii) Duality property of Fourier Transforms.	CO1	7 Marks

UNIT-III

5	a)	Consider an energy signal g(t) whose auto correlation function is given by R(λ). Show that | R(λ) | < = R(0) using Schwarz's inequality.	CO3	7 Marks
	b)	Find the correlation of symmetrical gate pulse with amplitude and time duration '***1***' with Itself.	CO4	7 Marks

(OR)

6	a)	Define system bandwidth and signal bandwidth, compare them with the help of examples.	CO1	7 Marks
	b)	A linear shift – invariant system has a frequency response: $H(w) = e^{jw}\left(\frac{1}{1.1+\cos w}\right)$. Find its input – output relation in time domain.	CO3	7 Marks

UNIT-IV

7	a)	Explain how Laplace Transform is useful to analyze the stability of systems in s domain	CO3	7 Marks
	b)	Describe the ROC of the signal $\boldsymbol{x}(t) = \mathbf{e}^{-a\|t\|}$ of $a > 0$ and $a \leq 0$	CO4	7 Marks

(OR)

8	a)	Prove that the Laplace Transform of even and odd functions is even and odd functions respectively.	CO3	7 Marks
	b)	Determine the Laplace Transform and associated ROC and pole-zero plot for the following function of time $\boldsymbol{x}(t) = \mathbf{e}^{-2t}\, u(t) + \mathbf{e}^{-3t} u(t)$.	CO4	7 Marks

UNIT-V

9	a)	Distinguish natural and flat top samplings.	CO1	7 Marks
	b)	Explain the effect of under sampling. Determine the minimum sampling rate and Nyquist interval of: **cos(200t) + cos(500t)** and **rect(300t)**	CO4	7 Marks

(OR)

10	a)	The final value of a system whose input $\boldsymbol{x}(t) = (2+\mathbf{e}^{-3t})\, u(t)$ is obviously $\boldsymbol{x}(\alpha) = 2$. Show that the final value can be found with final value theorem.	CO4	8 Marks
	b)	Explain the initial value theorem and final value theorem of z-transform.	CO1	6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

SWITCHING THEORY AND LOGIC DESIGN

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Deduce the following Boolean expression into Minimal of terms. i) F=X[Y+Z′ (XY+XZ′)′] ii) F=(X+(YZ)′)′ (XY′ +XYZ)	CO5	8 Marks
	b)	Prove Boolean expression using theorems i) Y+XY′ Z+YZ′ = XZ+YZ′ ii)XY′ Z+Y+YW′ + XYW′ + X′ Z = X+Z	CO4	6 Marks
		(OR)		
2	a)	Apply DeMorgan's Law to the following and Prove the expressions. i) AB+CD=((A′ + B′).(C′ + D′)) ii) [[(P+Q)′ (R+S)′ (T+V) ′ (X+Y)′] ′]′	CO4	7 Marks
	b)	Simplify following boolean functions to minterms and maxterms i) F(A, B, C) = A′ B′ C + A′ B′ C + A + BC + AB′ C + ABC. ii) F(A, B, C, D) = A + BC′ + ABD′ + ABCD	CO5	7 Marks

UNIT-II

3	a)	Express SOP and POS forms with suitable examples.	CO1	7 Marks
	b)	Express the standard SOP for the following expression. F(X, Y, Z, W) = (XY)′ W + XYZ′ W′ + X′ YW + XYZW	CO2	7 Marks
		(OR)		
4	a)	Explain tabulation method in detail with suitable example.	CO1	5 Marks
	b)	Simplify the Boolean function using K-map. F = ∑m(0, 1, 2, 7) + d(3, 4).	CO2	9 Marks

UNIT-III

5	a)	Design 4 to 16 line decoder using 2 to 4 line decoder.	CO3	7 Marks
	b)	Demonstrate shift registers in digital systems.	CO6	7 Marks
		(OR)		
6	a)	Deduce the following F = (A ⊕ B ⊕ C) using multiplexer.	CO3	7 Marks
	b)	Explain BCD adder in detail with neat sketches.	CO6	7 Marks

UNIT-IV

7	a)	Explain the operation of universal shift register with neat block diagram.	CO1	7 Marks
	b)	Design a Mod-6 synchronous counter using JK Flip-Flops.	CO3	7 Marks
		(OR)		
8	a)	Explain the operation of universal shift register with neat block diagram.	CO1	7 Marks
	b)	Convert JK Flip-Flop into D Flip-Flop.	CO2	7 Marks

UNIT-V

9	a)	Explain with neat sketches. i) PLA ii) PAL	CO1	7 Marks
	b)	Design PLA for the Boolean function F1(X,Y, Z) = X′ Y′ Z+XZ′ +YZ′, F2(X,Y, Z) = X′ Y′ +XY , F3(X, Y, Z) =YZ′	CO3	7 Marks
		(OR)		
10	a)	Implement Boolean function using PAL X(A, B, C, D) = Σm(2, 3, 10, 12, 13), Y(A, B, C, D) = Σm(1, 3, 4, 6, 9)	CO2	7 Marks
	b)	Design PLA for the Boolean function F1(X, Y, Z) = X′ Y′ Z + XZ′ + YZ′, F2(X, Y, Z) = X′ Y′ + XY, F3(X, Y, Z) = YZ′	CO3	7 Marks

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CODE No.: 16BT40101 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

CONCRETE TECHNOLOGY

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		When hydration of cement will occur and why?	CO1	14 Marks
		(OR)		
2		Briefly explain about deleterious substances in aggregates.	CO7	14 Marks

UNIT-II

3		Explain in detail the slump test with the help of a neat sketch. Discuss its merits and limitations.	CO4	14 Marks
		(OR)		
4		Explain different methods of placing of concrete.	CO2	14 Marks

UNIT-III

5		How the shrinkage of concrete is classified and explain each one of them briefly.	CO2	14 Marks
		(OR)		
6		Discuss and write the importance of NDT in detail.	CO5	14 Marks

UNIT-IV

7		As per IS standards, explain about nominal mixes, standard mixes and design mixes.	CO7	14 Marks
		(OR)		
8		Design the concrete mix for grade M20 with suitable conditions. Find the quantities of constituents of the mix for a bag of cement.	CO3	14 Marks

UNIT-V

9		What is the significance of RMC? Explain the advantages of RMC over site concrete mix.	CO1	14 Marks
		(OR)		
10	a)	What are the light weight aggregate concrete?	CO1	7 Marks
	b)	Explain workability scenario in light weight aggregate concrete.	CO1	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

ENGINEERING GEOLOGY

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Write the role of geological report for different phases of site investigations.	CO7	14 Marks
		(OR)		
2		Define weathering and analyze impact of atmospheric agents responsible for weathering.	CO2	14 Marks

UNIT-II

3		List the physical properties of Mica and Chlortie group of minerals.	CO2	14 Marks
		(OR)		
4		Classify the structures, textures of sedimentary rocks.	CO2	14 Marks

UNIT-III

5	a)	Explain the importance of structural geology maps for civil engineering projects.	CO1	9 Marks
	b)	A cavernous limestone bed in a dam site is found to be dipping at 1 in 6 along $S60^0W$ and 1 in 8 along $S15^0W$. Determine the strike direction and dip direction.	CO1	5 Marks
		(OR)		
6		Discuss electrical method of investigation for ground water exploration in detail.	CO4	14 Marks

UNIT-IV

7		Analyze the geological controls of groundwater movement in a sustainable geological environment.	CO6	14 Marks
		(OR)		
8		What are the shield areas and summarize the remedial measures to be taken for building construction in seismic areas?	CO5	14 Marks

UNIT-V

9		Analyze the influencing factors and remedial measures for a successful reservoir.	CO5	14 Marks
		(OR)		
10		Assess the suitable techniques to counteract the geological structures and groundwater problems at the tunnels site.	CO6	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Supplementary Examinations December-2018

ENGINEERING HYDROLOGY

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		What are the various forms and types of precipitation and explain them in detail.	CO4	14 Marks
		(OR)		
2		Explain various methods for the estimation of mean precipitation over an area.	CO4	14 Marks

UNIT-II

3		What is infiltration; explain infiltration capacity curve and infiltration indices?	CO2	14 Marks
		(OR)		
4		What is evapotranspiration and explain various methods for the direct measurement of evapotranspiration.	CO2	14 Marks

UNIT-III

5	a)	What is stream gauging and explain the pivot point method for the measurement of width in the river cross section.	CO1	7 Marks
	b)	Explain flow mass curve, flow duration curve and double mass curve.	CO3	7 Marks
		(OR)		
6	a)	Differentiate between i) Aquifer and aquiclude ii) Confined and unconfined aquifer.	CO2	7 Marks
	b)	Explain the rainfall runoff relationships.	CO5	7 Marks

UNIT-IV

7		Define unit hydrograph? How do you construct the unit hydrograph from a flood hydrograph of some unit duration?	CO3	14 Marks
		(OR)		
8		What is flood routing and explain Muskingum method.	CO3	14 Marks

UNIT-V

9		Explain in detail the classification of erosion.	CO6	14 Marks
		(OR)		
10		Explain erosion and reservoir sedimentation problems in India.	CO7	14 Marks

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CODE No.: 16BT40104 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

STRUCTURAL ANALYSIS-I

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Derive the expression for stresses on an inclined plane of a block subjected to normal stresses and shear stresses along two planes at right angles.	CO1	10 Marks
	b)	At a point in the girder the bending stress is 60 N/mm² and shearing stress is 30 N/mm², Calculate the principal stresses.	CO2	4 Marks

(OR)

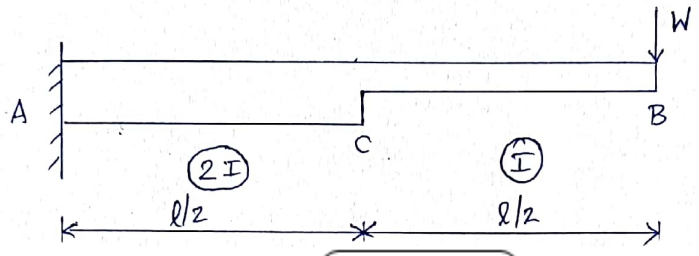
2	a)	The principal tensile stresses at a point across two perpendicular planes are 80 N/mm² and 40 N/mm². Find the normal, tangential and resultant stresses and its obliquity on a plane at 20° with the major principal plane.	CO2	7 Marks
	b)	At a point in a bracket the stresses on two mutually perpendicular planes are 120 N/mm² (tensile) and 20 N/mm² (tensile). The shear stress across these planes is 20 N/mm². Determine the direction and magnitude of principal stresses using graphical method.	CO2	7 Marks

UNIT-II

3	a)	Derive the expression for slope and deflection of a cantilever beam of length '***l***' subjected to an uniformly distributed load '***w/m***' through the entire span.	CO2	8 Marks
	b)	A beam having cross section 300 mm x 400 mm and length 4 m is subjected to uniformly distributed load of 5 kN/m throughout. Determine the maximum deflection and slope at the ends.	CO4	6 Marks

(OR)

4	a)	A simply supported beam 10 m long is loaded as shown in fig. Determine the deflection under the concentrated load using Macaulay's method.	CO2	7 Marks
	b)	Find slope and deflection at the free end of a cantilever beam shown in figure. Moment of inertia of AC is twice the moment of inertia of BC. Use moment area method.	CO2	7 Marks



UNIT-III

5		Differentiate between short and long column. Derive the Euler's formula when one end of the column is fixed and the other end is hinged.	CO1	14 Marks

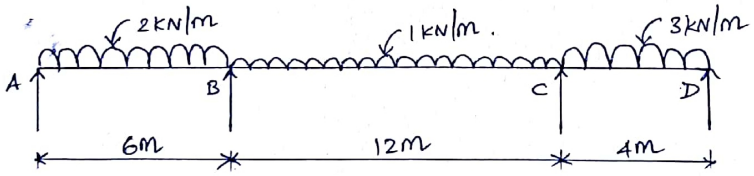
(OR)

6		A hollow cylindrical cast iron column is 4 m long with both ends fixed. Determine the minimum diameter of the column, if it has to carry a safe load of 250kN with a factor of safety as 5. Take the internal diameter as 0.8 times the external diameter. Take a = 1/1600 in Rankine's formula and stress as 550 MN/m².	CO5	14 Marks

UNIT-IV

7	A fixed beam of 8 m span carries a uniformly distributed load of 40 kN/m run over 4 m length starting from left end and a concentrated load of 80 kN at a distance of 6 m from the left hand end. Find: i) Moments at the supports ii) Deflection at the center of the beam. Take EI = 15000 kNm².	CO3	14 Marks

(OR)

8	A continuous beam ABCD of uniform cross – section is loaded as shown in the figure. Find: i) Bending moments at the supports B and C. ii) Reactions at the supports. Draw the B.M. and S.F. diagrams.  	CO6	14 Marks

UNIT-V

9	A shaft is subjected to a maximum torque of 10 kNm and a maximum bending moment of 7.5 kNm at a particular section. If the allowable equivalent stress in simple tension is 160 MN/m², find the diameter of the shaft according to maximum shear strain energy theory.	CO3	14 Marks

(OR)

10	Derive the expression for shear center of channel section.	CO1	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

WATER SUPPLY ENGINEERING

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Enumerate the different sources of water and recommend suitability regarding of quality and quantity wise. CO7 14 Marks

(OR)

2 a) Draw the flow diagram of water supply scheme and explain its components CO1 7 Marks

b) Discuss briefly about importance of water supply engineering. CO1 7 Marks

UNIT-II

3 The population of a town as per part census records is given below for the years 1951 to 2001. Calculate the population in the years 2026 and 2041 respectively using the following methods. CO2 14 Marks

i) Geometrical increase method.
ii) Arithmetical increase method.
iii) Incremental increase method.

Census Year	1941	1951	1961	1971	1981	1991	2001
Population	44487	62356	78538	63859	98861	117545	133582

(OR)

4 a) What are the different types of pipe materials used in the water conveyance? Explain their merits and demerits. CO4 7 Marks

b) Estimate the water requirements of town for the year 2000 by incremental increase method providing 200L per head per day in the 21st century. CO2 7 Marks

Census Year	1940	1950	1960	1970	1980
Population	2,37,98,624	4,69,78,325	5,47,86,437	6,34,67,823	6,90,77,421

UNIT-III

5 a) What is disinfection? Identify the factors affecting disinfection. CO1 7 Marks

b) Explain the methods which are used to disinfect water and state the quality requirements of good disinfectant. CO7 7 Marks

(OR)

6 a) Design a clariflocculator for a flow of 3000m^3/hr, whose detention time is 20min and velocity gradient is 40sec^{-1}. Also determine the power requirement if coefficient of dynamic viscosity is 1.0087x10^{-3}N-s/m^2, L/B ratio as 2 and depth may be assumed as 0.4B. CO3 7 Marks

b) Draw and label the parts of the rectangular sedimentation tank indicating the various zones. CO1 7 Marks

UNIT-IV

7 Explain the activated carbon treatments to pollutants removed and advantages of the process. CO3 14 Marks

(OR)

8 Suggest a suitable technique to the fluorosis problem and also explain how the fluorides can be removed from water. CO5 14 Marks

UNIT-V

9	a)	Write short notes on: i) Ferrule. ii) Goose neck.	CO1	7 Marks
	b)	Explain the "one" and "two" pipe system of plumbing and state the conditions under which they are adopted.	CO1	7 Marks
		(OR)		
10		Explain a water supply service connection from the street main to a residential building and state the functions of each fitting.	CO1	14 Marks

CODE No.: 16BT40201 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

ELECTRICAL MEASUREMENTS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Design an universal shunt used for extended the range of ammeters. Derive expressions for resistances of different sections of an universal shunt used for a 3 range ammeter.	CO3	7 Marks
	b)	Explain the basic static characteristics of a measuring instrument.	CO1	7 Marks
		(OR)		
2	a)	Describe the constructional details of an attraction type Moving Iron instrument with the help of a neat diagram. Derive the equation for deflection, if spring control is used and comment upon the shape of the scale.	CO1	10 Marks
	b)	Two resistors are connected in parallel. The value of resistances are R_1=1kΩ±1%, R_2=500Ω±2%.Assuming given errors as uncertainty, Calculate the uncertainty in the combined resistance.	CO4	4 Marks

UNIT-II

3	a)	Prove that the true power = $\frac{COS\phi}{COS\phi \times \text{Cos}(\phi - \beta)}$ X actual wattmeter reading for EDM type wattmeter, where Cosø = power factor of the circuit and $\beta = \tan^{-1}(wL/R)$.	CO2	6 Marks
	b)	A wattmeter has a current coil of 0.03Ω resistance and pressure coil of 6000Ω resistance. Calculate the percentage error if the wattmeter is so connected that: i) The current coil is on the load side. ii) The Pressure coil on the load side. If the load takes 20A at a voltage of 220V and 0.6 p.f in each case.	CO4	8 Marks
		(OR)		
4		Discuss in detail about the following adjustments to be made in a single phase induction type energy meter. i) Lag adjustment. ii) Adjustment for friction compensation. iii) Creep. iv) Over load compensation.	CO1	14 Marks

UNIT-III

5	a)	Describe in detail about the various errors occurs in the current transformers and design a suitable compensation to reduce the errors	CO3	7 Marks
	b)	A CT has a single turn primary and has 200 turns in secondary winding. The secondary supplies a current of 5A to a non inductive burden of 1Ω. The requisite flux is set up in the core by 80 ampere-turns in the primary winding. The frequency is 50Hz and the cross sectional area of the core is 11cm^2 and the stacking factor is 0.91. Calculate i) The current ratio and phase angle error of the transformer. ii) The flux density in the core. Neglect the effects of magnetic leakage, iron and copper losses.	CO4	7 Marks
		(OR)		

6		Discuss the theory of a Potential Transformer (PT) with phasor diagram. Derive expressions for actual transformation ratio, ratio error and phase angle error of a PT.	CO1	14 Marks

UNIT-IV

7	a)	Explain the loss of charge method used for the measurement of high resistance.	CO5	7 Marks
	b)	The four arms of a Wheatstone bridge are as follows AB = 100Ω; BC = 1000Ω; CD = 2000Ω; DA = 200Ω. The galvanometer has a resistance of 200Ω, a sensitivity of 5mm/μA and it is connected across AC. A source of 5V DC is connected across BD. Calculate the current through the galvanometer and its deflection, if the resistance of arm DA is changed from 200Ω to 202Ω.	CO4	7 Marks

(OR)

8	a)	Describe the working of a low voltage Schering bridge with a neat phasor diagram under balanced condition and derive the equations for unknown capacitance and dissipation factor.	CO2	7 Marks
	b)	A capacitor bushing forms arm AB of a Schering bridge and a standard capacitor of 500pF capacitance and negligible loss, forms arm AD. Arm BC consists of a non-inductive resistance of 300Ω, when the bridge is balanced arm CD is 72.6Ω in parallel with a capacitance of 0.148μF. The supply frequency is 50Hz. Calculate the capacitance and dielectric loss angle of capacitor. Operating frequency of the bridge is 50Hz.	CO4	7 Marks

UNIT-V

9		Describe with the help of suitable diagrams how a DC potentiometer can be used for: i) Calibration of PMMC ammeter. ii) Calibration of PMMC voltmeters. iii) Calibration of a Wattmeter. iv) Determination of unknown resistance.	CO6	14 Marks

(OR)

10		Explain in detail digital energy meter with neat block diagram and enumerate its advantages over analog type.	CO1	14 Marks

CODE No.: 16BT40202 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

GENERATION OF ELECTRIC POWER

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss about ash handling system used in thermal power stations and describe briefly various ash handling systems used in modern power plant.	CO1	4 Marks
	b)	Write the function of condenser in turbine and explain the need of preheating air and feed water before feeding to the boiler.	CO1	4 Marks
	c)	Discuss some factors to be considered for site selection of thermal power plant.	CO5	6 Marks
		(OR)		
2		With a neat diagrams, write a short notes on: i) Condenser. ii) Economizer. iii) Air pre-heater. iv) Super heater. v) Feed water system. vi) Cooling tower. vii) Chimney.	CO1	14 Marks

UNIT-II

3	a)	With the help of neat sketch, give the layout of diesel power plant and explain each component.	CO1	8 Marks
	b)	Classify different types of internal combustion engines used in diesel power stations.	CO2	4 Marks
	c)	Discuss some environmental regulations to be followed while erecting steam power generating plants.	CO8	2 Marks
		(OR)		
4	a)	Write different types of cooling systems used in diesel power stations.	CO1	8 Marks
	b)	Give the description of simple gas turbine plant with a neat sketch.	CO1	6 Marks

UNIT-III

5	a)	Write various factors to be considered in choosing location of solar electric systems and discuss its impact of solar power plants on environment.	CO7	7 Marks
	b)	Explain the preliminary design procedure for solar electric systems.	CO3	7 Marks
		(OR)		
6	a)	Explain briefly about the conversion of wind energy towards electrical energy.	CO6	7 Marks
	b)	Write various factors to be considered while choosing location of wind energy systems.	CO5	7 Marks

UNIT-IV

7	a)	Derive relation between load factor and loss factor.	CO2	8 Marks
	b)	A generating station has maximum demand of 100MW. Calculate cost per unit, if capital cost is Rs. 200×10^6, annual load factor is 40%, annual cost of fuel and oil are Rs 15×10^6, taxes, wages and salaries is Rs 10×10^6. Interest and depreciation is 15%.	CO4	6 Marks
		(OR)		
8	a)	Define tariff. Discuss various tariffs used in practice and write desirable characteristics of tariff.	CO2	10 Marks
	b)	A generating station has a maximum demand of 500MW. The annual load factor is 50% and capacity factor of 40%. Find reserve capacity of plant.	CO4	4 Marks

UNIT-V

9	a)	"The most economical power factor depends upon the relative costs of supply and p.f. correction equipment but is independent of the original p.f.". Justify your answer with relevant equations.	CO2	7 Marks
	b)	A 3-phase, 50Hz, 400V motor develops 100H.P. (74·6 kW), the power factor being 0·75 lagging and efficiency 93%. A bank of capacitors is connected in delta across the supply terminals and power factor raised to 0·95 lagging. Each of the capacitance units is built of 4 similar 100V capacitors. Design a suitable capacitor bank for the purpose.	CO3	7 Marks

(OR)

10	a)	Discus in detail about shunt and series capacitors.	CO1	6 Marks
	b)	An industrial load consists of; i) a synchronous motor of 100 metric h.p. ii) induction motors aggregating 200 metric h.p., 0·707 power factor lagging and 82% efficiency and iii) lighting load aggregating 30kW. The tariff is Rs 100 per annum per kVA maximum demand plus 6 paise per kWh. Find the annual saving in cost if the synchronous motor operates at 0·8 p.f. leading 93% efficiency instead of 0·8 p.f. lagging at 93% efficiency.	CO4	8 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

TRANSFORMERS AND INDUCTION MACHINES

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Derive an expression for the emf induced in a transformer winding. Show that emf per turn in primary is equal to emf per turn in the secondary.	CO1	8 Marks
	b)	A single phase transformer is designed to operate at 240/120V, 50 Hz. Keeping the secondary open circuited, comment on the induced voltage, current, frequency of the induced voltage in primary and secondary and core losses in the transformer if the HV side of the transformer is connected to: i) 480V, 50Hz and ii) 240V, DC.	CO2	6 Marks

(OR)

2	a)	In a transformer, derive the condition for maximum efficiency and thus find the load current at which the efficiency is maximum.	CO1	6 Marks
	b)	A single phase transformer has a core with cross sectional area is 150cm², operates at a maximum flux density of 1.1Wb/m² from a 50Hz supply. If the secondary winding has 66 turns, determine the output in kVA when connected to a load of 4Ω impedance. Neglect voltage drop in the transformer.	CO4	8 Marks

UNIT-II

3	a)	Two transformers operating in parallel have different reactance to resistance ratios. Show that one transformer operates at a better power factor than the other.	CO1	6 Marks
	b)	The following Fig. 1 illustrates four terminals AB and CD of a two winding transformer. When a voltage of 100V is applied across AB and BD short circuited, voltage across terminals AC is found to be 100V. Find the polarity and turns ratio of the transformer.	CO4	8 Marks

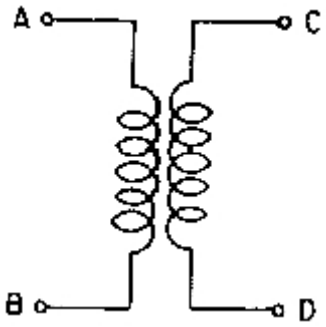

Fig. 1

(OR)

4	a)	Explain Sumpner's test with proper illustrations. What are it's limitations?	CO1	6 Marks
	b)	Two similar 40kVA single phase transformers gave the following results when tested by the back to back method: W_1 in the supply line = 800 watts. W_2 in the secondaries series circuit at rated current = 1000 watts. Calculate the efficiency of each transformer at unity p.f.	CO4	8 Marks

UNIT-III

5	a)	Explain V-V connection and thus bring out its uses, advantages and disadvantages.	CO1	6 Marks
	b)	An 11000/440V, 50Hz, 3-phase transformer is delta connected on the HV side and the LV windings are star connected. A transformer is to be designed with 12V per turn and the flux density not exceeding 1.2Wb/m^2. Obtain the number of turns per phase on each winding and the net iron cross-sectional area of the core.	CO3	8 Marks

(OR)

6	a)	List out the advantages and disadvantages of having one three-phase transformer over three single-phase transformers for supplying a 3-phase load.	CO1	6 Marks
	b)	A 3-phase step-down transformer is connected to 6.6kV mains and takes 10 A. Calculate the secondary line voltage, line current and output for the following connections: (i) Δ/Δ (ii) Y/Y (iii) Δ/Y (iv) Y/Δ. The ratio of turns per phase is 12. Neglect losses.	CO4	8 Marks

UNIT-IV

7	a)	Establish a relation between full load torque and maximum torque of a three phase induction motor.	CO1	7 Marks
	b)	"An induction machine is called rotating transformer". Justify.	CO2	7 Marks

(OR)

8	a)	Explain why the rotor of a polyphase induction motor can never attain synchronous speed.	CO1	6 Marks
	b)	A 3-phase 50Hz induction motor has a full load speed of 1440 r.p.m. Evaluate: i) full load slip and rotor frequency. ii) speed of stator field w.r.t stator structure and rotor structure. iii) speed of rotor field w.r.t stator structure and rotor structure.	CO4	8 Marks

UNIT-V

9		Draw the circle diagram for a 3.73kW, 200V, 50Hz, 4-pole, 3-phase star connected induction motor from the following test data: **No-Load test:** Line voltage 200V, Line current 5A, total input 350W. **Blocked Rotor test:** Line voltage 100V, Line current 26A, total input 1700W. Estimate from the diagram for full-load condition, the line current, power factor and also the maximum torque in terms of the full-load torque. The rotor Copper loss at standstill is half the total Cu loss.	CO4	14 Marks

(OR)

10	a)	Explain the phenomenon of crawling in an induction motor.	CO1	7 Marks
	b)	A 12kW, 3-phase, 6-pole, 50Hz, 400V delta connected induction motor runs at 960 r.p.m on full-load. If it takes 85A on direct starting, find the ratio of the starting torque to full-load torque with a star-delta starter. Full-load efficiency and power factor are 88% and 0.85 respectively.	CO2	7 Marks

CODE No.: 16BT40301 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

DESIGN OF MACHINE ELEMENTS - I

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are preferred numbers? Mention their advantages.	CO1	7 Marks
	b)	State the mechanical properties of metals and explain briefly.	CO1	7 Marks
		(OR)		
2	a)	Briefly explain shear stress and shear strain.	CO1	4 Marks
	b)	A cylindrical shaft made of steel of yield strength 700MPa is subjected to static loads, consisting of bending moment of 10kN-m and a torsional moment 30kN-m. Determine the diameter of the shaft using two different theories of failure and assuming a factor of safety of 2. Take E = 210GPa and Poisson's ratio = 0.25.	CO2	10 Marks

UNIT-II

3	a)	Explain notch sensitivity and formulate the notch sensitivity equation.	CO2	4 Marks
	b)	A circular bar of 500mm length is supported freely at its two ends. It is acted upon by a central concentrated cyclic load having a minimum value of 20kN and a maximum value of 50kN. Determine the diameter of bar by taking a factor of safety of 1.5, size effect of 0.85, surface finish factor of 0.9. The material properties of bar is given by: ultimate strength of 650MPa, yield strength of 500MPa and endurance strength of 350MPa.	CO2	10 Marks
		(OR)		
4		Draw and explain the soderberg and Goodman lines with neat sketches.	CO1	14 Marks

UNIT-III

5	a)	Explain bolts of uniform strength.	CO1	4 Marks
	b)	Pressure of steam acting on the head of the cylinder is 0.7MPa, when the diameter of the cylinder is 300mm. The load is held in position by 12 bolts of size M20 x 2.5. The soft copper gasket is used to make the joint. Determine the stresses induced in bolt.	CO2	10 Marks
		(OR)		
6		A plate 100mm wide and 10mm thick is to be welded to another plate by means of double parallel fillets. The plates are subjected to a static load of 80KN. Find the length of weld if the permissible shear stress in the does not exceed 55MPa.	CO4	14 Marks

UNIT-IV

7		Design and draw a protective type of cast iron flange coupling for a steel shaft transmitting 15kW at 200 r.p.m. and having an allowable shear stress of 40MPa. The working stress in the bolts should not exceed 30MPa. Assume that the same material is used for shaft and key and that the crushing stress is twice the value of its shear stress. The maximum torque is 25% greater than the full load torque. The shear for cast iron is 14MPa.	CO5	14 Marks
		(OR)		

8		A line shaft is driven by means of a motor placed vertically below it (Figure-1). The pulley on the line shaft is 1.5 metre in diameter and has belt tensions 5.4kN and 1.8kN on the tight side and slack side of the belt respectively. Both these tensions may be assumed to be vertical. If the pulley be overhang from the shaft, the distance of the centre line of the pulley from the centre line of the bearing being 400mm. find the diameter of the shaft. Assuming Maximum allowable shear stress of 42MPa.	CO3	14 Marks

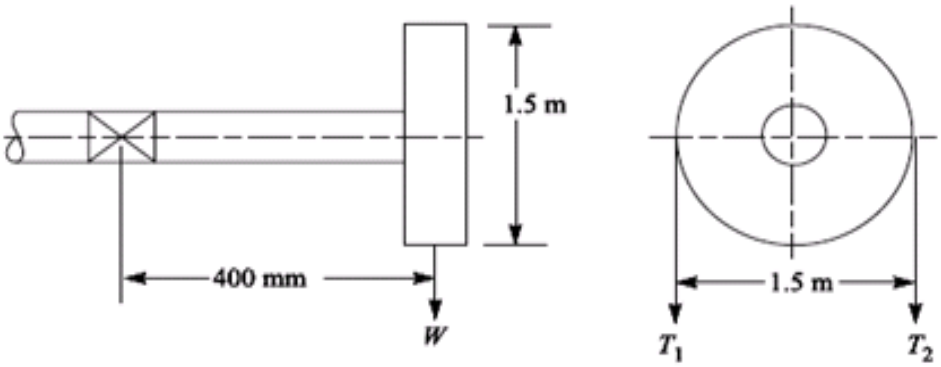

Figure-1

UNIT-V

9		A cotter joint to connect piston rod to the cross head of a double acting steam engine. The diameter of the cylinder is 300mm and the steam pressure is 1N/mm^2. The allowable stresses for the material of cutter and piston rod are as follows. σ_E = 50MPa; ζ = 40MPa; σ_C = 84MPa.	CO3	14 Marks

(OR)

10	a)	Describe the purpose of gib in cotter joint. What are the applications of cotter joints?	CO1	4 Marks
	b)	Draw and design a knuckle joint to transmit 140kN with permissible stresses in tension, shear and compression are 75MPa, 60MPa and 150MPa respectively.	CO3	10 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

DYNAMICS OF MACHINERY

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe with a neat sketch a centrifugal clutch and deduce an equation for the total torque transmitted.	CO1	6 Marks
	b)	A multi-disc clutch has three discs on the driving shaft and two on the driven shaft. The outside diameter of the contact surfaces is 240mm and inside diameter 120mm. Assuming uniform wear and coefficient of friction as 0.3, find the maximum axial intensity of pressure between the discs for transmitting 25kW at 1575 r.p.m.	CO2	8 Marks

(OR)

2	a)	Distinguish between brakes and dynamometers.	CO1	4 Marks
	b)	A simple band brake is operated by a lever of length 500mm. The brake drum has a diameter of 500mm and the brake band embraces 5/8 of the circumference. One end of the band is attached to the fulcrum of the lever while the other end is attached to a pin on the lever 100mm from the fulcrum. If the effort applied to the end of the lever is 2kN and the coefficient of friction is 0.25, find the maximum braking torque on the drum.	CO2	10 Marks

UNIT-II

3	a)	Explain the application of gyroscopic principles to aircrafts.	CO1	6 Marks
	b)	An aeroplane runs at 600km/h. The rotor of the engine weighs 4000N with radius of gyration of 1 metre. The speed of rotor is 3000 r.p.m. in anticlockwise direction when seen from rear side of the aeroplane. If the plane takes a loop upwards in a curve of 100 metres radius, find: i) gyroscopic couple developed. ii) effect of reaction gyroscopic couple developed on the body of aeroplane.	CO3	8 Marks

(OR)

4	a)	Explain the turning moment diagram of a four stroke cycle internal combustion engine.	CO1	6 Marks
	b)	A single cylinder, single acting, four stroke gas engine develops 20kW at 300 r.p.m. The work done by the gases during the expansion stroke is three times the work done on the gases during the compression stroke, the work done during the suction and exhaust strokes being negligible. If the total fluctuation of speed is not to exceed ± 2 per cent of the mean speed and the turning moment diagram during compression and expansion is assumed to be triangular in shape, find the moment of inertia of the flywheel	CO3	8 Marks

UNIT-III

5		Explain the term height of the governor. Derive an expression for the height in the case of a Watt governor. What are the limitations of a Watt governor?	CO1	14 Marks

(OR)

6		A spring loaded governor of the Hartnell type has arms of equal length. The masses rotate in a circle of 130mm diameter when the sleeve is in the mid position and the ball arms are vertical. The equilibrium speed for this position is 450 r.p.m., neglecting friction. The maximum sleeve movement is to be 25mm and the maximum variation of speed taking in account the friction to be 5% of the mid position speed. The mass of the sleeve is 4kg and the friction may be considered equivalent to 30N at the sleeve. The power of the governor must be sufficient to overcome the friction by one per cent change of speed either way at mid-position. Determine, neglecting obliquity effect of arms; i) The value of each rotating mass. ii) The spring stiffness in N/mm. iii) The initial compression of spring.	CO2	14 Marks

UNIT-IV

7	a)	Why is balancing of rotating parts necessary for high speed engines?	CO1	6 Marks
	b)	Explain the method of balancing of different masses revolving in the different planes.	CO1	8 Marks

(OR)

8		The following data apply to an outside cylinder uncoupled locomotive: Mass of rotating parts per cylinder = 360 kg; Mass of reciprocating parts per cylinder = 300 kg; Angle between cranks = 90°; Crank radius = 0.3m; Cylinder centres = 1.75m; Radius of balance masses = 0.75m ; Wheel centres = 1.45m. If whole of the rotating and two-thirds of reciprocating parts are to be balanced in planes of the driving wheels, find : i) Magnitude and angular positions of balance masses. ii) Speed in kilometres per hour at which the wheel will lift off the rails when the load on each driving wheel is 30kN and the diameter of tread of driving wheels is 1.8m. iii) Swaying couple at speed arrived at in (ii) above.	CO4	14 Marks

UNIT-V

9	a)	Define free vibrations, forced vibrations and damped vibrations.	CO1	6 Marks
	b)	Explain the term 'whirling speed' or 'critical speed' of a shaft. Prove that the whirling speed for a rotating shaft is the same as the frequency of natural transverse vibration.	CO1	8 Marks

(OR)

10		The mass of an electric motor is 120kg and it runs at 1500 r.p.m. The armature mass is 35kg and its C.G. lies 0.5mm from the axis of rotation. The motor is mounted on five springs of negligible damping so that the force transmitted is one-eleventh of the impressed force. Assume that the mass of the motor is equally distributed among the five springs. Determine : i) Stiffness of each spring. ii) Dynamic force transmitted to the base at the operating speed. iii) Natural frequency of the system.	CO5	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC-16) Supplementary Examinations December-2018

FLUID MECHANICS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss different types of fluids based on Newton's law of viscosity.	CO1	8 Marks
	b)	Calculate the capillary effects in a glass tube of 4mm diameter when immersed in water and in mercury. The temperature of the liquid is 20ºC and the values of surface tension of water and mercury at 20ºC in contact with air are 0.0735N/m and 0.48N/m. The contact angles for water and mercury are 0º, 130º.	CO2	6 Marks
		(OR)		
2		Discuss the following with neat figures: i) Piezometer ii) U-tube Manometer iii) U-tube Differential Manometer.	CO1	14 Marks

UNIT-II

3	a)	Explain the classification of fluid flows, justify with examples.	CO2	8 Marks
	b)	What do you understand from orifice? Explain.	CO1	6 Marks
		(OR)		
4	a)	How Bernoulli's equation is derived from the Euler's equation.	CO2	6 Marks
	b)	A horizontal water pipe of diameter 15cm converges to 7.5 cm diameter. If the pressure at the two sections are 400 kPa and 150 kPa respectively. Calculate the rate of flow of water.	CO5	8 Marks

UNIT-III

5	a)	Define and explain the terms: Hydraulic Gradient Line and Total Energy Line.	CO1	6 Marks
	b)	A pipe line of 60cm diameter is divided into two branches of 40cm and 30cm in diameter at a Y- junction. If the rate of flow in the main pipe is 1.5 m^3/s and mean velocity of flow in 30cm diameter pipe is 7.5 m/s, determine the rate of flow in the 40cm diameter pipe.	CO4	8 Marks
		(OR)		
6	a)	Derive an expression for the force exerted by the jet on a moving flat plate in a direction normal to the plate.	CO3	7 Marks
	b)	Draw velocity diagram for a moving plate with jet tangentially striking at one end. Specify each term related to the velocity diagram both at inlet and outlet.	CO3	7 Marks

UNIT-IV

7	a)	Explain the working of Pelton wheel with a neat sketch.	CO2	8 Marks
	b)	A Kaplan turbine is to be designed to develop 9100 kW. The net available head is 5.6m. If the speed ratio is 2.09, flow ratio is 0.68, overall efficiency is 86% and the diameter of the boss is 1/3 of the diameter of the runner. Find the diameter of the runner.	CO4	6 Marks

(OR)

8	a)	Derive an expression for specific speed of a turbine in terms of power (P), head (H), speed in rpm (N).	CO1	7 Marks
	b)	Explain the following terms i) cavitation ii) water hammer iii) surge tank.	CO1	7 Marks

UNIT-V

9	a)	Compare centrifugal and reciprocating pumps.	CO2	8 Marks
	b)	Describe manometric efficiency, mechanical efficiency and overall efficiency of a centrifugal pump.	CO1	6 Marks

(OR)

10	a)	What is the function of air vessels in a reciprocating pump?	CO1	7 Marks
	b)	A single acting reciprocating pump running at 50 r.p.m delivers 0.01 m^3/s of water. The diameter of the piston is 200mm and stroke length 400mm. Determine: The theoretical discharge of the pump, coefficient of discharge, slip and percentage slip of the pump.	CO6	7 Marks

CODE No.: 16BT40304 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

MACHINE TOOLS AND MODERN MACHINING PROCESSES

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I		
1		Discuss the relationship between various angles and forces as per the Merchant's analysis of metal cutting.	CO6	14 Marks
		(OR)		
2	a)	Explain the factors influencing tool life.	CO1	7 Marks
	b)	Analyze the need of a cutting fluid in machining.	CO2	7 Marks
		UNIT-II		
3		List the various types of taper turning methods and discuss them briefly with neat sketches.	CO1	14 Marks
		(OR)		
4		A carbide tool gave a tool life of 200 m/min at 20 m/min and 28 min at 80 m/min. Compute the tool life equation and cutting speed for minimum life.	CO4	14 Marks
		UNIT-III		
5	a)	Illustrate and describe the working principle of planer.	CO1	7 Marks
	b)	Design the various mechanisms of shaper.	CO1	7 Marks
		(OR)		
6	a)	List out various operations performed in drilling machine. Explain with simple sketches.	CO1	7 Marks
	b)	Explain with a neat sketch the construction and working principle of a radial drilling machine.	CO1	7 Marks
		UNIT-IV		
7	a)	Discuss the term Up milling and down milling with neat sketch.	CO2	7 Marks
	b)	Name various types of milling machines. Explain in brief about horizontal milling machine.	CO1	7 Marks
		(OR)		
8	a)	Classify and explain various types of cylindrical grinding machine.	CO1	7 Marks
	b)	Analyze the need of dressing and truing of a grinding wheel.	CO2	7 Marks
		UNIT-V		
9	a)	With neat diagram explain the principle of Laser Beam Machining.	CO5	7 Marks
	b)	State its advantages and limitations of Laser Beam Machining.	CO5	7 Marks
		(OR)		
10	a)	Sketch and explain the principle of Abrasive Jet Machining.	CO5	7 Marks
	b)	State its advantages and limitations of Abrasive Jet Machining.	CO5	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

THERMAL ENGINEERING-I

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the pumping and rubbing frictional losses.	CO1	7 Marks
	b)	Explain exhaust blowdown factor. Discuss the optimum opening position of exhaust valve to reduce the exhaust blowdown loss.	CO2	7 Marks

(OR)

2	a)	Compare the relative advantages and disadvantages of four stroke and two stroke engines.	CO1	7 Marks
	b)	List the important reciprocating engine parts and explain in detail.	CO1	7 Marks

UNIT-II

3	a)	Describe the phenomena of knocking in S.I engines. What are the different factors which influence the knocking? Describe the methods used in suppress it.	CO4	7 Marks
	b)	How do you rate the fuels used in S.I. engines? Explain their combustion characteristics.	CO1	7 Marks

(OR)

4	a)	What is the delay period and what are the factors that effect the delay period?	CO2	7 Marks
	b)	Describe with suitable sketch the combustion phenomenon in S.I engines and explain the three phases of combustion.	CO1	7 Marks

UNIT-III

5	a)	List the parameters by which performance of an engine is evaluated.	CO2	7 Marks
	b)	Explain the significance of the following tests: i) Motoring test. ii) Morse test. iii) Retardation test.	CO1	7 Marks

(OR)

6	a)	Explain the methods of obtaining Friction Power and explain any one of them in details.	CO1	7 Marks
	b)	In a laboratory experiment, the following observations were noted during the test of a four-stroke diesel engine. Area of the indicator diagram = 420mm Length of the indicator diagram = 62mm² Spring number = 1.1bar/min Diameter of the piston = 100mm Length of stroke = 150mm Engine speed = 450rpm Determine: i) Indicated mean effective pressure ii) Indicated power.	CO5	7 Marks

UNIT-IV

7	a)	Write a short note on excess air and adiabatic flame temperature.	CO1	6 Marks
	b)	A coal sample gave the analysis by weight, carbon 85%, hydrogen 6% oxygen 6%, the remainder being incompressible. Determine minimum weight of air required per kg of coal for chemically correct composition.	CO5	8 Marks

(OR)

8	a)	What do you mean by the stoichiometric air/fuel ratio and enthalpy of formation?	CO1	7 Marks
	b)	The chemical formula for alcohol is C_2H_6O. Calculate the stoichiometric air/fuel ratio by mass and the percentage composition of the products of combustion per kg of C_2H_6O.	CO5	7 Marks

UNIT-V

9	a)	Derive an expression for the work done by single stage single acting reciprocating air compressor.	CO2	7 Marks
	b)	Drive an expression for the volumetric efficiency of reciprocating air compressors.	CO2	7 Marks

(OR)

10	a)	Draw P-V and T-S diagram for single stage reciprocating air compressor, without clearance. Derive the expansion for the work done. When compression is: i) Isothermal. ii) Isentropic.	CO1	7 Marks
	b)	A three stage single acting reciprocating air compressor delivers 2.5m^3 of free air per minute from 1 bar to 72 bar. Calculate the power required to operate compressor if n = 1.3. The mean piston speed is 140m/min. Find the piston area, neglecting the clearance volume.	CO2	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

ANALOG COMMUNICATIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain briefly the generation of AM wave using: i) Square law modulator. ii) Switching modulator.	CO1	10 Marks
	b)	The output power of an AM transmitter is 1KW when sinusoidal signal modulated to a depth of 100%. Calculate the power in each side band when the modulation depth is reduced to 50%.	CO5	4 Marks
		(OR)		
2	a)	Discuss the appropriate amplitude modulation technique which requires modulated band width equal to the twice of message signal band width and less power consumption.	CO5	7 Marks
	b)	Explain the working of Costas loop receiver for demodulating DSB-SC wave.	CO1	7 Marks

UNIT-II

3	a)	Explain FM generation using direct method.	CO1	8 Marks
	b)	An FM wave is defined by $S(t) = 10\cos(2+\sin(6\pi t))$. Find the instantaneous frequency S(t).	CO3	6 Marks
		(OR)		
4	a)	Derive the expression for FM wave in terms of Bessel functions if message signal is $\cos\omega_m t$ and carrier is $\cos\omega_c t$.	CO2	8 Marks
	b)	Find the bandwidth of a single tone modulated FM signal described by $S(t) = 10\cos[2\pi 10^8 t + 6\sin(2\pi 10^3 t)]$.	CO3	6 Marks

UNIT-III

5	a)	Derive the expression for SNR and Figure of merit of coherent reception of DSB modulated wave.	CO2	8 Marks
	b)	An amplifier with 25dB noise figure and 8dB power gain is cascaded. With a second amplifier has a 20dB power gain and 6dB noise figure. What is the overall noise figure and power gain?	CO4	6 Marks
		(OR)		
6	a)	Show that the SNR for a standard single tone FM wave is given by $SNR_O = 3E_c^2(m_f)^2/4N_0W$.	CO2	8 Marks
	b)	Define the sensitivity factor in FM and PM. Calculate the resulting bandwidth if ; i) FM Sensitivity $K_f = 10^4$Hz/Volt ii) PM Sensitivity $K_P = 100\pi$ radian/Volt Assume the carrier frequency = 100MHz.	CO4	6 Marks

UNIT-IV

7	a)	In a broadcast super heterodyne receiver having no RF amplifier, the loaded Q of the antenna coupling circuit is 100. If the IF frequency is 455KHz, determine the image frequency and its rejection for tuning at 25MHz.	CO6	6 Marks
	b)	Discuss the following AM receiver's characteristics. i) Sensitivity. ii) Selectivity. iii) Fidelity. iv) Double spotting.	CO1	8 Marks
		(OR)		

8	a)	An AM receiver operates with a tone modulation and the modulation index ma = 0.4. The message signal is 20cos(1000πt). Calculate the output SNR relative to the baseband performance.	CO6	5 Marks
	b)	Discuss the following terms. i) Alignment. ii) Tracking. iii) Intermediate frequency.	CO1	9 Marks

UNIT-V

9	a)	Write a short note on PWM modulation and its generation with neat sketches.	CO1	7 Marks
	b)	Explain the generation and demodulation of PPM with the help of block diagram and hence discuss its spectral characteristics.	CO1	7 Marks

(OR)

10	a)	Explain how a PPM signal can be generated from a PWM signal.	CO1	7 Marks
	b)	Define and distinguish between PTM and PAM schemes. Sketch and explain their waveform for a single tone sinusoidal input signal.	CO2	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

DIGITAL IC APPLICATIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What do you mean by current spikes? Explain the need of decoupling and filtering capacitors.	CO2	7 Marks
	b)	Design AND-OR-INVERT gate in CMOS with its truth table.	CO3	7 Marks
		(OR)		
2	a)	Design a 4-input CMOS OR-AND-INVERT gate. Explain the circuit with the help of logic diagram and function table.	CO3	6 Marks
	b)	Analyze the fall time of CMOS inverter output with R_L = 100, V_L = 2.5V and C_L = 10PF. Assume V_L as stable state voltage.	CO2	8 Marks

UNIT-II

3	a)	Appraise the concept of mixed modelling for system level design.	CO4	7 Marks
	b)	Illustrate the salient features of data flow design elements.	CO1	7 Marks
		(OR)		
4	a)	List the capabilities of Verilog HDL.	CO1	6 Marks
	b)	Develop a Verilog HDL code to solve an expression. Consider any function having five variables.	CO4	8 Marks

UNIT-III

5	a)	Identify the applications of EXOR and EXNOR. And explain 4-Bit magnitude comparator.	CO5	7 Marks
	b)	Explain in detail about 8 x 8 combinational multiplier.	CO1	7 Marks
		(OR)		
6	a)	Sketch the diagram of a 4-bit comparator and briefly explain about it. Write a structural Verilog HDL code for it.	CO1	7 Marks
	b)	Design barrel shifter for 8-bit using three control inputs using multiplexers or shift registers.	CO5	7 Marks

UNIT-IV

7	a)	Realize JK-FF using D-FF. Sketch the necessary logic diagrams and explain the operation.	CO4	7 Marks
	b)	Appraise the steps in design of the synchronous design methodology.	CO5	7 Marks
		(OR)		
8	a)	Design and illustrate the working of parallel-in serial-out shift register. Write the Verilog HDL code for parallel-in serial-out shift register.	CO4	7 Marks
	b)	List and summarize applications of counters.	CO6	7 Marks

UNIT-V

9	a)	Identify the need for two-dimensional decoding mechanism in memories. Draw MOS transistor memory cell in ROM and explain the operation.	CO6	7 Marks
	b)	List and explain the applications of FPGA.	CO1	7 Marks
		(OR)		
10	a)	Describe the operation of synchronous SRAM with the help of internal architecture.	CO1	7 Marks
	b)	Appraise the important aspects of 2n X b SRAM behavior.	CO6	7 Marks

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II B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

ELECTROMAGNETIC THEORY AND TRANSMISION LINES

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	State Gauss Law. List the applications of Gauss Law.	CO1	4 Marks
	b)	Derive an expression for the Electric Field Intensity and Electric Flux Density due to an infinite sheet of conductor of charge density ρC/m using Gauss Law.	CO2	10 Marks

(OR)

2	a)	Show that $W_E = \frac{1}{2}\int \varepsilon_0 E^2 dv$.	CO2	7 Marks
	b)	State Ampere's Law. Estimate the magnetic field intensity for an infinite sheet of current density K A/m.	CO1	7 Marks

UNIT-II

3	a)	Derive the equation of continuity for time varying fields.	CO2	7 Marks
	b)	A Parallel plate capacitor with a plate area of $5cm^2$ and plate separation of 3mm has a voltage 50 Sin 10^3t V applied to its plates. Calculate the displacement current assuming $\varepsilon = 2\varepsilon_0$.	CO4	7 Marks

(OR)

4	a)	Calculate ω and E for a medium characterized by $\sigma = 0$, $\mu = 2\mu_0$ and $\varepsilon = 5\varepsilon_0$, if $H = 2\cos(\omega t - 3y)a_z$ A/m.	CO4	7 Marks
	b)	Derive the Maxwell's equation for time varying fields that relates space varying electric field and time varying magnetic field.	CO2	7 Marks

UNIT-III

5	a)	Characterize the Wave Propagation in Good Conductors.	CO6	7 Marks
	b)	A polarized wave is incident from air to polystyrene with $\mu = \mu_0$, $\varepsilon = 2.6\varepsilon_0$ at Brewster angle. Determine the transmission angle.	CO5	7 Marks

(OR)

6	a)	State and Prove Poynting Theorem. Justify the Poynting theorem and differentiate time average and instantaneous poynting vectors.	CO6	7 Marks
	b)	Illustrate the reflection by a perfect dielectric at normal incidence for parallel polarization. Formulate the expressions for fields, reflection and transmission coefficients.	CO5	7 Marks

UNIT-IV

7	a)	Prove that a line of finite length and terminated by its characteristic impedance Z_0 is equivalent to a line of infinite length.	CO3	8 Marks
	b)	Explain the different types of Transmission Lines.	CO1	6 Marks

(OR)

8	a)	Design a Lossless transmission line for a characteristic impedance of 75Ω. Assume R = 10Ω/Km and G = 0.5 x 10^{-3} mhos/Km.	CO3	7 Marks
	b)	List and explain the various types of distortions that occur in a transmission line.	CO1	7 Marks

UNIT-V

9	a)	Derive the expression for the input impedance of a quarter wave transmission line.	CO2	7 Marks
	b)	Develop a step wise procedure to design double stub matching using smith chart.	CO6	7 Marks
		(OR)		
10	a)	Derive the expression for the input impedance of a half wave and $\lambda/8$ transmission line.	CO2	7 Marks
	b)	Justify the preference of short circuited stubs over open circuited stubs.	CO6	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC-16) Supplementary Examinations December-2018

LINEAR IC APPLICATIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	List and explain the function of all the basic building blocks of an op-amp.	CO1	7 Marks
	b)	Define common mode rejection ratio. Explain its significance.	CO1	7 Marks
		(OR)		
2	a)	Explain the terms i) slew rates; ii) CMRR; iii) PSRR; iv) Drift.	CO1	8 Marks
	b)	Explain clearly about the stability of op-amp, with the help of open loop gain vs frequency curve.	CO1	6 Marks

UNIT-II

3	a)	Draw and explain the circuit of V/I converter if the load is i) Floating; ii) Grounded.	CO3	7 Marks
	b)	Explain clearly the requirements of a practical differentiator with the help of its frequency response.	CO3	7 Marks
		(OR)		
4	a)	What is a precision diode? Draw and briefly explain the operation of a circuit that detects the peak value of any given signal.	CO4	7 Marks
	b)	Explain the operation of an Astable multivibrator using op-amp and also derive for its frequency of output.	CO3	7 Marks

UNIT-III

5	a)	Explain the necessity and operation of all the parts of a series op-amp regulator.	CO1	6 Marks
	b)	Derive the transfer function for a general second order active filter using op-amp. Show its frequency response for different damping constants.	CO2	8 Marks
		(OR)		
6	a)	Design a band pass filter so that f_o=2KHz, Q=20 and A_o=10 with C=1μF.	CO3	7 Marks
	b)	Explain how current limiting and current fold back characteristics are obtained in IC 723 regulator.	CO3	7 Marks

UNIT-IV

7	a)	Explain how a 555 timer in its Astable mode can be connected as a pulse position modulator?	CO1	7 Marks
	b)	Draw the circuit of PLL AM detector and explain its operation.	CO1	7 Marks
		(OR)		
8	a)	What is capture range? Derive the expression for lock range in a PLL.	CO1	7 Marks
	b)	Draw the circuit of a Schmitt trigger using 555 timer and explain its operation.	CO1	7 Marks

UNIT-V

9	a)	Explain about the successive approximate conversion in an ADC. Why it is advantages over the other methods of ADCs.	CO1	8 Marks
	b)	Explain about i) Resolution; ii) Linearity; iii) Monotonicity.	CO1	6 Marks
		(OR)		
10	a)	Which type of ADC is fastest? Explain clearly why?	CO1	7 Marks
	b)	Explain clearly the D/A conversion in a 3-bit R-2R ladder circuit.	CO1	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

PROBABILITY AND STOCHASTIC PROCESS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Committee of 5 persons is to be selected randomly from a group of 5 men and 10 women. i) Find the probability that the committee consists of 2 men and 3 women. ii) Find the probability that the committee consists of all women.	CO1	7 Marks
	b)	A submarine attempts to sink an aircraft carrier. It will be successful only if two or more torpedoes hit the carrier. If the sub fires three torpedoes and the probability of a hit 0.4 for each torpedo, what is the probability that the carrier will be sunk?	CO4	7 Marks

(OR)

2	a)	Consider the experiment of tossing a fair coin repeatedly and counting the number of tosses required until the first head appears. i) Find the probability that the first head appears on an even-numbered toss. ii) Find the probability that the first head appears on an odd-numbered toss.	CO1	7 Marks
	b)	Two manufacturing plants produce similar parts. **Plant 1** produces 1,000 parts, 100 of which are Defective. **Plant 2** produces 2,000 parts, 150 of which are defective. A part is selected at random and found to be defective. What is the probability that it came from plant 1?	CO4	7 Marks

UNIT-II

3	a)	The Sample Space for an experiment is S = {0, 1, 2, 5, 6}. List all possible values of the following random variables for X = 2S, X = (S-1)(S+1). Sketch the CDF and PDF.	CO1	7 Marks
	b)	A Random Variable X is Gaussian with mean is zero and standard deviation is one. i) What is the probability that X > 2 ? ii) What is the probability that | X| >2 ?	CO3	7 Marks

(OR)

4	a)	Define cumulative probability distribution function and state the properties of the cumulative probability distribution function.	CO1	7 Marks
	b)	Assume automobile arrivals at a gasoline station are Poisson and occur at an average rate of 50/h. The station has only one gasoline pump. If all cars are assumed to require one minute to obtain fuel, what is the probability that a waiting line will occur at the pump.	CO3	7 Marks

UNIT-III

5	a)	Define Marginal density function? Find the Marginal density functions of below joint density function. $f_{xy}(x, y) = ½ [u(x)\, u(y)\, e^{-x/3} e^{-y/4}]$.	CO1	7 Marks
	b)	Distinguish between point conditioning and interval conditioning.	CO2	7 Marks
		(OR)		
6	a)	State the basic properties of joint distribution of (X, Y) when X and Y are random variables.	CO1	7 Marks
	b)	Find the density function of W = X + Y, Where the densities of X and Y are assumed to be $f_x(x) = 4u(x)e^{-4x}$, $f_y(y) = 5u(y)\, e^{-5y}$.	CO2	7 Marks

UNIT-IV

7	a)	Distinguish between i) Deterministic and non-deterministic process. ii) Stationary and non-stationary random process.	CO2	6 Marks
	b)	Let two random processes X(t) and Y(t) be defined by $X(t) = A \cos \omega_0 t + B \sin \omega_0 t$; $Y(t) = B \cos \omega_0 t - A \sin \omega_0 t$, Where A and B are random variables and ω_0 is a constant. Assume A and B are uncorrelated, zero mean random variables with same variance. Find the cross correlation function $R_{XY}(t, t+\tau)$.	CO3	8 Marks
		(OR)		
8	a)	Given the auto correlation function for a stationary ergodic process with no periodic components is $R_{XX}(\tau) = 25 + 4/(1 + 6\tau^2)$. Find mean and variance of process X(t).	CO2	6 Marks
	b)	Statistically independent zero mean random processes X(t) and Y(t) have auto correlations functions $R_{XY}(\tau) = e^{-\lvert\tau\rvert}$ and $R_{YY}(\tau) = \cos(2\Pi\tau)$ respectively. i) Find the auto correlation function of the sum $W_1(t) = X(t)+Y(t)$. ii) Find the auto correlation function of difference $W_2(t) = X(t)-Y(t)$. iii) Find the cross correlation function of $W_1(t)$ and $W_2(t)$.	CO3	8 Marks

UNIT-V

9	a)	List different types of noise.	CO1	4 Marks
	b)	Given three cascaded amplifiers in which there is impedance matching between the stages having an overall system noise figure of 5.6dB Stage 1: SNR_{OUT} =120, $P_{ni} = 0.01 \times 10^{-6} W$, $G = 20$ Stage 2: F = 12, G = 30 Stage 3: F = 9.3dB, G = 35 Find i) Noise factor and Noise figure of Stage 1 ii) Input signal power of Stage 1 iii) Noise added by the Stage 1 amplifier	CO4	10 Marks
		(OR)		
10	a)	Determine : i) Noise figure for an equivalent noise temperature of 75K and 60ºC ii) Equivalent noise temperature for a noise figure of 6dB.	CO1	6 Marks
	b)	A satellite receiver with noise figure of 12dB has a bandwidth of 1MHz and consists of preamplifier with a noise temperature of 127K and a gain of 20dB. Calculate the overall noise figure and equivalent noise temperature of the receiver. Assume a reference temperature of 290K.	CO4	8 Marks

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II B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

PULSE AND DIGITAL CIRCUITS

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

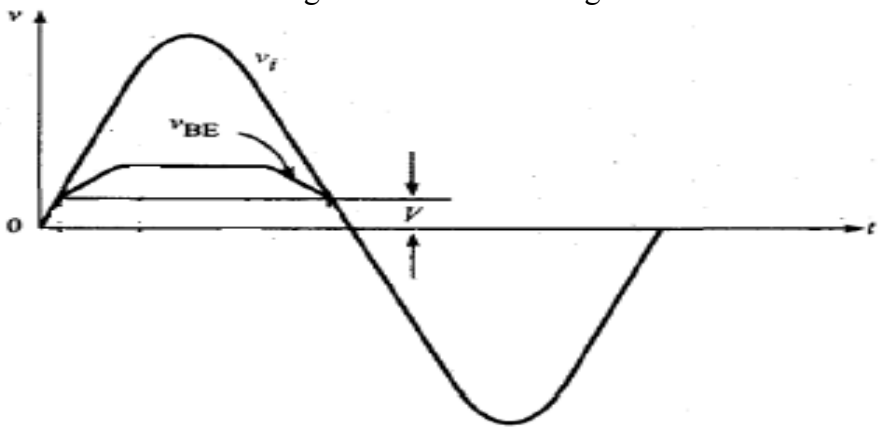
Answer One Question from each Unit
All questions carry equal marks

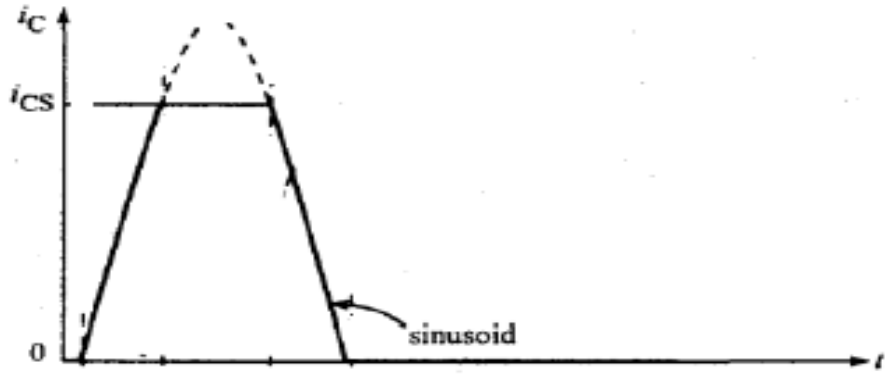
UNIT-I

1	a)	Explain the operation of RC differentiator circuit and sketch the response for step input.	CO1	8 Marks
	b)	If a Pulse of 5V amplitude and pulse width of 0.5ms is applied to high pass RC circuit consisting of R = 22KΩ and C = 0.47μF, calculate % Tilt of the output waveform.	CO4	6 Marks
		(OR)		
2	a)	Sketch response of RC low pass circuit excited by a Pulse wave form.	CO1	6 Marks
	b)	A 5V Pulse with width of 100μs is applied to a series RC circuit with R = 27KΩ and C = 0.1μ F. Determine the amplitude of output voltage.	CO4	8 Marks

UNIT-II

3	a)	Design a diode clamper circuit to clamp the positive peak of the input signal at zero level. The frequency of input signal is 500Hz. (Assume R_f = 100Ω, R_r = 150KΩ and let RC = 20T).	CO3	8 Marks
	b)	Apply appropriate control signals to synchronize input and output signals of a clamping circuit.	CO5	6 Marks
		(OR)		
4	a)	Explain the transfer characteristics of the emitter coupled clipper.	CO1	7 Marks
	b)	Apply appropriate transistor clipper circuit that generates the following current waveform for the given sinusoidal voltage.	CO5	7 Marks





UNIT-III

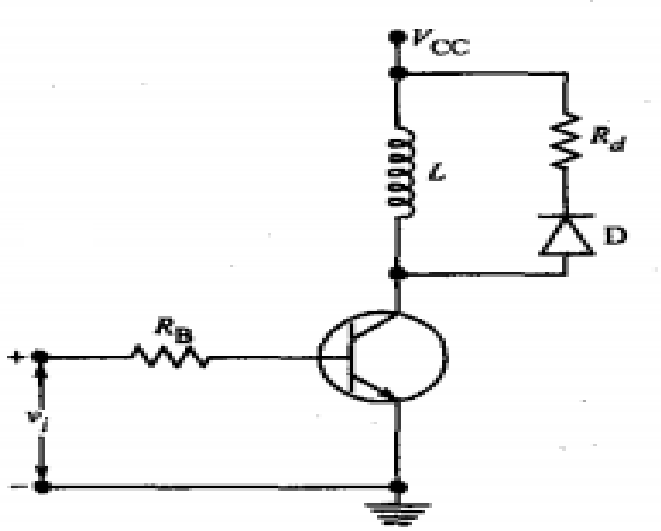
5	a)	Justify why the two capacitors are connected in parallel with the resistors R_1's of a Bistable Multivibrator.	CO2	7 Marks
	b)	Design a Collector-Coupled fixed bias Bistable Multivibrator to meet the specifications V_{cc}= V_{BB} =12V, h_{FE}= 25, $I_{c(sat)}$ = 6mA, Maximum trigger frequency = 25kHz.	CO3	7 Marks

(OR)

6	a)	Distinguish between: i) Stable State and a Quasi- Stable State. ii) Symmetrical and Unsymmetrical triggering.	CO2	6 Marks
	b)	Design a Collector-Coupled one-shot multivibrator with the following specifications. Output pulse duration=500m-sec, $h_{FE(min)}$ = 25, $I_{c(sat)}$ = 5mA, V_{CC}= 10 V, V_{BB} = - 4 V, $V_{CE(sat)}$= 0.4V, $V_{BE(sat)}$ = 0.8V.	CO3	8 Marks

UNIT-IV

7	a)	Explain the principle and working of a Transistor Miller time-base generator.	CO1	8 Marks
	b)	In the circuit shown below, V_{CC}=20V, L=200mH, the yoke resistance R_L=20Ω, R_{CS} =5Ω and R_d = 200Ω. For a 500μs sweep, draw the waveforms of i_L and V_{CE} and calculate the slope error of the sweep.	CO4	6 Marks



(OR)

8	a)	Explain the principle and working of a Transistor Bootstrap time-base generator.	CO1	7 Marks
	b)	Derive the expressions for Sweep-speed error, Displacement error and Transmission error of an exponential circuit.	CO2	7 Marks

UNIT-V

9	a)	Identify appropriate Logic family to obtain low Fan-in and high Fan-out for optimal circuit design with explanation.	CO6	7 Marks
	b)	Discuss the applications of Sampling gates.	CO1	7 Marks

(OR)

10	a)	Identify appropriate Logic family to obtain less propagation delay and low power dissipation for optimal circuit design with explanation.	CO6	6 Marks
	b)	Implement AND gate using diodes and transistors.	CO2	8 Marks

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II B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

COMPUTER GRAPHICS

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Design DDA line drawing algorithm between points (A, B) and (C, D).	CO3	7 Marks
	b)	Demonstrate Midpoint circle algorithm.	CO5	7 Marks
		(OR)		
2	a)	Discuss the operation of an Electron-gun with accelerating anode.	CO2	7 Marks
	b)	List some applications for the following display technologies: Raster-scan systems, Random scan systems.	CO1	7 Marks

UNIT-II

3	a)	Explain Homogeneous co-ordinates with matrix representations.	CO1	7 Marks
	b)	Explain briefly the general 2-Dimensional Composite transformations computational efficiency.	CO1	7 Marks
		(OR)		
4	a)	Derive mathematically, the Transformation that rotates an object point θ^0 anticlockwise, about the origin. Write the matrix representation for this rotation.	CO3	7 Marks
	b)	Develop Scan-line polygon fill algorithm for a specified area.	CO4	7 Marks

UNIT-III

5	a)	Explain about Bezier curves with its properties.	CO1	6 Marks
	b)	Develop an algorithm for calculating the normal vector to a Bezier surface at the point P (u, v).	CO4	8 Marks
		(OR)		
6	a)	Define Polygon. Explain different types of polygons and various approaches used to represent polygon.	CO1	7 Marks
	b)	Explain the procedure for generation of various surfaces and curves using B-spline method.	CO1	7 Marks

UNIT-IV

7	a)	Discuss 3-Dimensional Rotation transformation in detail.	CO2	8 Marks
	b)	Calculate the new coordinates of a block rotated about x axis by an angle of 30^0. The original coordinates of the block are given relative to the global xyz axis system. A(1,1,2) B(2,1,2) C(2,2,2) D(1,2,2) E(1,1,1) F(2,1,1) G(2,2,1) H(1,2,1).	CO6	6 Marks
		(OR)		
8	a)	Explain Perspective projections with example.	CO1	7 Marks
	b)	Differentiate Parallel and Perspective projections.	CO2	7 Marks

UNIT-V

9	a)	Explain Scan-line method with diagrams.	CO1	8 Marks
	b)	Differentiate between Flat and Smooth shading.	CO2	6 Marks
		(OR)		
10	a)	What are the steps involved in depth buffer algorithm?	CO1	6 Marks
	b)	Implement the depth-buffer method to display the visible surfaces in a scene containing any number of polyhedrons.	CO5	8 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

DATABASE MANAGEMENT SYSTEMS

[Common to Computer Science and Engineering, Information Technology Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe the relationship between Entities, Attributes, Entity sets and key.	CO3	7 Marks
	b)	Write short notes on the following and give examples to each: i) Key constraints. ii) Participation constraint. iii) Weak entity.	CO5	7 Marks
		(OR)		
2	a)	Discriminate the File system versus Database Management System.	CO2	7 Marks
	b)	List and explain the advantages of DBMS.	CO1	7 Marks

UNIT-II

3	a)	How is a View created and dropped? What are the problems that are associated with updating of views?	CO2	7 Marks
	b)	Consider the following relations and write relational algebra queries: Employee (Fname, SSN, Salary, Super-SSN, DNo); Works ON (ESSN, PHNO, hours); Department (Dname, Dnumber, Mgr-SSN); Dependent (ESSN, Dependentname); i) Retrieve the highest salary paid in each department. ii) Retrieve the name of managers who have more than two dependents. iii) Retrieve the number of employees and their average salary working in each department.	CO4	7 Marks
		(OR)		
4	a)	What is a view? Explain about data independence and security with views.	CO3	7 Marks
	b)	Write the semantics for tuple relational calculus queries.	CO2	7 Marks

UNIT-III

5	a)	Define decomposition and how does it address redundancy. Discuss the problems that may be caused by the use of decomposition.	CO3	7 Marks
	b)	Define functional dependencies. How are primary keys related to FD's?	CO2	7 Marks
		(OR)		
6	a)	Define normalization. Explain 1NF, 2NF, 3NF Normal forms.	CO1	7 Marks
	b)	Explain about Schema refinement in Database design.	CO3	7 Marks

UNIT-IV

7	a)	Discuss how to recover from concurrent transactions.	CO2	7 Marks
	b)	Explain different types of advanced recovery techniques.	CO4	7 Marks
		(OR)		
8	a)	What is Deadlock? How to handle deadlock in DBMS?	CO2	7 Marks
	b)	Discuss about Implementation of Isolation.	CO3	7 Marks

UNIT-V

9	a)	Why is a B+ tree a better structure than a B tree for implementation of an indexed sequential file? Illustrate this with an example.	CO4	7 Marks
	b)	Write short note about the following. i) Stripping. ii) Advantages of RAID. iii) Mirroring in RAID levels.	CO1	7 Marks

(OR)

10	a)	Write the differences between Primary versus secondary indexes.	CO3	7 Marks
	b)	Explain in detail about external hashing techniques.	CO5	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

INDUSTRIAL INSTRUMENTATION – I

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	If a shaft is made of a non conducting/insulating material what kind of sensing mechanism could be used for the measurement of torque. Justify your sensor selection and explain its principle using a neat sketch.	CO1	7 Marks
	b)	Define Static torque. With a neat sketch, explain the construction and working principle of Torque measurement using Strain Gage.	CO2	7 Marks
		(OR)		
2	a)	Analyze different Torque sensing mechanisms, summarize them and give 3 different units of Torque.	CO2	7 Marks
	b)	What is relative Force? Design a sensing mechanism setup to detect the direction of force.	CO3	7 Marks

UNIT-II

3	a)	Analyze Tachometers and Tachogenerators. Summarize and give 3 different units for the quantity they measure.	CO2	7 Marks
	b)	With a neat sketch, explain the construction of Piezoelectric accelerometer and how it can be used for measurement of acceleration.	CO1	7 Marks
		(OR)		
4	a)	While measuring speed of a steam turbine with stroboscope single line images were observed for stroboscope setting of 3000, 4000, 5230 r.p.m. Calculate the speed of the turbine.	CO4	7 Marks
	b)	Analyze different gyroscopes. List some applications of them. Summarize and mention the basic principle of any gyroscope. Draw a neat sketch of it and mention basic parts of it.	CO2	7 Marks

UNIT-III

5	a)	Using an appropriate sketch, explain measurement of very high pressure.	CO1	7 Marks
	b)	What is Gage Pressure? Give different units of pressure. Select an appropriate device that could be used for calibration of a Pressure Gauge and explain the setup and operation.	CO5	7 Marks
		(OR)		
6	a)	With a neat sketch, explain the measurement of pressure using a force balance mechanism.	CO1	7 Marks
	b)	Analyze different types of electrical type medium pressure sensing mechanism, summarize them.	CO2	7 Marks

UNIT-IV

7	a)	Analyze RTD, Thermocouple and Thermistor. Summarize and comment on performance and other parameters of them and give 3 different units of Temperature.	CO2	7 Marks
	b)	List different applications of Thermistors and temperature sensors.	CO5	7 Marks
		(OR)		

8	a)	Explain the basic construction working principle and types of RTD.	CO1	7 Marks
	b)	A Thermistor is used for measuring temperature of a hot bath tub. A signal conditioning, display and control system is around 10m away from the hot bath tub. A constant current of 1A sourced from measuring circuit. In a 3-Lead resistance the voltage drop across 1 and 2 terminals is 10V. The voltage drop across 2 and 3 terminals is 1V. i) Draw the 3-Wire symbol, circuit and indicate terminals. ii) What is the resistance of Thermistor and each individual lead wire in 3-lead resistance method? iii) What is the error in a 2-wire method as compared to 3-wire method? iv) If linear relationship is considered, what would be the resistance of 1m length of wire? v) If resistance of the Thermistor decrease by 10%, what would be the voltage across the Thermistor?	CO4	7 Marks

UNIT-V

9	a)	Name some IC temperature sensors that are based on transistors and give any one characteristic and explain working principle.	CO1	7 Marks
	b)	Select an appropriate sensor for measurement of temperature with little or no power. Justify your sensor selection and explain how this sensor works with a neat sketch.	CO1	7 Marks

(OR)

10	a)	Explain very high temperature measurement using total radiation pyrometers.	CO1	7 Marks
	b)	Analyze different radiation detectors. Summarize and comment on performance and other parameters of them and give 3 different units of temperature.	CO2	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Supplementary Examinations December-2018

LINEAR AND DIGITAL ICS

[Electrical and Electronics Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Draw the block diagram of an op-amp and Explain about each block and also explain the ideal and practical characteristics of IC 741.	CO1	6 Marks
	b)	Explain the Inverting configuration of amplifier using op-amp and Derive the expressions for A_f, R_{if} and R_{of} of for practical conditions.	CO1	8 Marks
		(OR)		
2	a)	Why frequency compensation is needed in an op-amp? Explain dominant pole and pole zero compensation techniques.	CO1	7 Marks
	b)	Design an analog IC which has a slew rate of 2V/us. What is the maximum frequency of an output sinusoid of peak valve 5V at which the distortion sets in due to the slew rate limitation?	CO6	7 Marks

UNIT-II

3	a)	Explain the basic principle of operation of RC Phase shift oscillator. Derive the condition for frequency of oscillations.	CO3	6 Marks
	b)	Design a first order low pass filter with a cut off frequency of 1KHz and a pass band gain of 2.	CO3	8 Marks
		(OR)		
4	a)	What are the important features of an instrumentation amplifier using 3 op-amps and derive expression for output voltage?	CO2	6 Marks
	b)	Draw the first order low-pass Butter worth filter and analyze the same by deriving the gain and phase angle equation.	CO2	8 Marks

UNIT-III

5	a)	Explain the operation of 555Timer in Astable mode with neat functional diagram and derive the expression for free running frequency.	CO2	8 Marks
	b)	Explain the operation of successive approximation type A-D converter with an example.	CO1	6 Marks
		(OR)		
6	a)	Explain the construction and working of R-2R Ladder type D/A converter with a neat circuit diagram.	CO1	7 Marks
	b)	Explain the principle of operation of 565 PLL with the help of block diagram.	CO1	7 Marks

UNIT-IV

7	a)	Write a detail notes on CMOS logic families.	CO1	7 Marks
	b)	Explain HDL based design flow.	CO1	7 Marks
		(OR)		
8	a)	Outline the features of CMOS dynamic electrical behavior.	CO1	7 Marks
	b)	Design a 4 input CMOS gate to implement the logic $Y = ((A + B + C).D)'$.	CO3	7 Marks

UNIT-V

9	a)	Sketch the diagram and explain the operation of 74 x 148 decoder.	CO2	7 Marks
	b)	Develop a Verilog program for a universal shift register.	CO6	7 Marks
		(OR)		
10	a)	Use appropriate structure to develop 8:1 multiplexer using two 4:1 multiplexer.	CO5	7 Marks
	b)	Sketch the diagram and explain the operation of 74 x 283 adder.	CO2	7 Marks

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CODE No.: 16BT41041 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

COMPUTER ARCHITECTURE AND ORGANIZATION

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Bring out the differences between SRAM and DRAM.	CO2	7 Marks
	b)	Analyze the memory hierarchy in terms of speed, size, cost, access time and performance.	CO2	7 Marks
		(OR)		
2	a)	With an example, show how user program and OS routine share the processor time effectively.	CO2	7 Marks
	b)	List the different types of buses present in a computer. Sketch the interconnections of the functional units of a computer to a single bus structure.	CO1	7 Marks

UNIT-II

3		Draw and explain the architecture of 8085 microprocessor.	CO1	14 Marks
		(OR)		
4	a)	Explain the significance of following pins of 8085 microprocessor. i) ALE. ii) $\overline{RD}$. iii) IO/$\overline{M}$. iv) INTR.	CO1	7 Marks
	b)	With suitable examples, discuss about 8085 microprocessor instructions used for data manipulation.	CO1	7 Marks

UNIT-III

5	a)	Define an addressing mode. Give examples for different addressing modes of 8085 microprocessor.	CO1	7 Marks
	b)	Write an 8085 program to perform addition of two bytes by accessing data from memory and store the result in memory.	CO4	7 Marks
		(OR)		
6	a)	List different hardware and software and interrupts of 8085 microprocessor and mention their purpose.	CO3	7 Marks
	b)	Differentiate between a memory mapped I/O and I/O Mapped I/O.	CO2	7 Marks

UNIT-IV

7		Design the arithmetic logic shift unit and derive the function table.	CO3	14 Marks
		(OR)		
8	a)	Design the control unit of a basic computer.	CO3	7 Marks
	b)	Discuss in detail about various types of shift micro-operations.	CO1	7 Marks

UNIT-V

9	a)	Select suitable algorithm for adding and subtracting numbers in signed 2's complement representation.	CO5	7 Marks
	b)	Define data Hazard. Explain data hazard with a suitable case study.	CO2	7 Marks
		(OR)		
10		Multiply 10111 with 10011 using Booth's algorithm. Show that the hardware for performing the multiplication can be optimized by employing the hardware used for addition/subtraction.	CO6	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Supplementary Examinations December-2018

DESIGN AND ANALYSIS OF ALGORITHMS

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

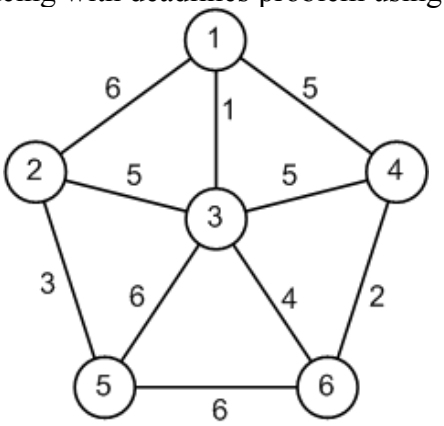
1	a)	Write an algorithm to find out maximum element in a given array.	CO1	7 Marks
	b)	What are asymptotic notations? Describe using examples.	CO1	7 Marks
		(OR)		
2	a)	Suppose there are two algorithms for same problem with time complexities $F(n) = 3n^2-3n+1$ and $G(n) = n^2$, find which algorithm works faster.	CO1	7 Marks
	b)	Write recursive algorithm to find sum of n numbers. Discuss its time complexity	CO1	7 Marks

UNIT-II

3	a)	What are connected components? Explain.	CO1	7 Marks
	b)	What are spanning trees? Explain. Also give applications.	CO3	7 Marks
		(OR)		
4	a)	State the differences between DFS and BFS algorithms using examples.	CO1	7 Marks
	b)	Write about sets and its operations.	CO1	7 Marks

UNIT-III

5	a)	Describe Job sequencing with deadlines problem using example.	CO4	4 Marks
	b)		CO1	10 Marks



Find the tree from the above graph with minimum cost and no loss of nodes.

i) Name the above problem
ii) Which design technique you applied in solving above problem?
iii) List the algorithms to solve the problem.
iv) Differentiate the procedures in solving the problem.
v) Evaluate time complexities.

(OR)

6	a)	There are three objects with profits 1, 2, 5 and weights 2, 3, 4 also given a bag with capacity of 6 units. How to place objects in to the bag without breaking and total profit earned should be maximum.	CO1	7 Marks
	b)	Sort the following elements using Quick sort algorithm. Also write the algorithm with Tree calls representation.	CO4	7 Marks

42	12	3	19	16	2	10	14	8	6

UNIT-IV

7	a)	What is branch and bound technique? Explain 0/1 Knapsack problem using branch and bound technique	CO5	7 Marks
	b)	What is backtracking? Explain Hamiltonian cycles.	CO5	7 Marks

(OR)

8	a)	What is matrix chain multiplication? Give example.	CO5	4 Marks
	b)	State sum of subsets problem. Solve the problem using backtracking. Also mention the algorithm steps in solving the problem.	CO1, CO5	10 Marks

UNIT-V

9	a)	What is Branch and Bound technique? Explain.	CO1	4 Marks
	b)	Solve the following Travelling salesman problem (TSP) by the method of Least Cost Branch Bound. Represent each stage of computation using state space tree. Here 1, 2, 3, 4, 5 represents different cities and each cell value is the distance between corresponding two cities.	CO1	10 Marks

	1	**2**	**3**	**4**	**5**
1	∞	20	30	10	11
2	15	∞	16	4	2
3	3	5	∞	2	4
4	19	6	18	∞	3
5	16	4	7	16	∞

(OR)

10	a)	Write and explain control abstraction for least cost search method	CO1	7 Marks
	b)	Illustrate the terms P, NP, NP-Hard and NP-Complete. Also represent the relationship among these problems.	CO1	7 Marks

CODE No.: 16BT41202 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

JAVA PROGRAMMING

[Common to Computer Science and Engineering; Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is byte code? What are instance variables?	CO1	7 Marks
	b)	List categories of operators supported by Java.	CO2	7 Marks
		(OR)		
2	a)	What is a class? Explain the syntax for declaring a class with an example	CO1	4 Marks
	b)	Why does Java not support `goto` statements? What is the alternative way of defining `goto` statement behavior in Java?	CO1	5 Marks
	c)	Explain in detail about constructor overloading with an example.	CO1	5 Marks

UNIT-II

3	a)	Create an abstract class ***Accounts*** with the following details: Data members: i) Balance ii) AccountNumber iii) AccountHoldersName iv) Address Methods: i) Withdrawal() – abstract ii) Deposit() – abstract iii) Display() to show the balance of the account number Create a subclass of this class SavingsAccount and add the following details: Data members: i) RateofInterest Methods: i) calculateAmount() ii) display() to display rate of interest with new balance and full account holder details Create another subclass of the Account class, i.e. CurrentAccount with the following Data members: i) overdraftLimit Method: i) display() to show overdraft limit along with the full account holder details Create objects of these two classes and call their methods. Use appropriate constructors.	CO6	7 Marks
	b)	Design an interface to implement Stack ADT.	CO3	7 Marks
		(OR)		
4	a)	How can we access an interface from another interface?	CO1	7 Marks
	b)	What is a package? Explain it with an example and also write how to import packages?	CO1	7 Marks

UNIT-III

5	a)	What are the Exception types? What is a finally block? When and how is it used? Give a suitable example.	CO1	7 Marks
	b)	Design a java program showing the actions form three threads. Use **`Runnable`** interface to create the threads. Make sure that the main thread always executes last.	CO3	7 Marks

(OR)

6	a)	Create a user-defined exception named checkArgument to check the number of arguments passed through command line. If the number of arguments is less than five, throw the checkArgument exception, else print the addition of all the five numbers.	CO4	7 Marks
	b)	What is multitasking? Is multi threading a form of multitasking?	CO1	7 Marks

UNIT-IV

7		Design a Java applet with the following components: Add four labels with Text only, image only, image and text with text displayed at top center, image only at right position. Add four buttons to the Applet - **`Button1`** with text "Try Me", **`Button2`** with text in the right position. **`Button3`** with the corn image and text in the left position and **`Button4`** with grapes image. Whenever a button is clicked, display a message about the selection in a text field. Make this text field non-editable, so that user cannot change its content. Add keyboard mnemonic to button 3 so that the button can be selected by pressing Alt + C in the keyboard. Add a tooltip to **`Button4`**, so that it will be displayed when mouse hovers over the button.	CO5	14 Marks

(OR)

8		Design a java program to perform the following using linked list. i) Remove a node form the list ii) Insert a node at the end of the list iii) Insert a node anywhere in the existing list iv) Remove a node anywhere in the existing list	CO3	14 Marks

UNIT-V

9	a)	What are servlets? What are the three methods that are central to the life cycle of a servlet?	CO1	7 Marks
	b)	Design a servlet which displays current system date and time.	CO3	7 Marks

(OR)

10	a)	Design a java program to implement Mouse and keyboard events.	CO1	12 Marks
	b)	What are the tasks of a servlet?	CO1	2 Marks

CODE No.: 16BT41203 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

SOFTWARE ENGINEERING

[Common to Computer Science and Engineering, Computer Science and Systems Engineering, Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Demonstrate umbrella activities of a Software process.	CO1	7 Marks
	b)	Explain in detail about the layers involved in Unified process model.	CO1	7 Marks
		(OR)		
2	a)	Compare and contrast between Agile Modeling and Agile Unified process.	CO2	7 Marks
	b)	List and explain three examples of software projects that would be amenable to the incremental model. Be specific.	CO1	7 Marks

UNIT-II

3	a)	Define Requirement Engineering. Categorize seven distinction tasks to fulfill the needs of the project.	CO2	8 Marks
	b)	What are the five things checked and validated under requirement validation sub-process of Requirement Engineering?	CO1	6 Marks
		(OR)		
4		Suppose as a system analyst you are given the task of writing SRS for clock Room Application of railway. This system should allow the passengers to book room on the Internet by paying a fixed fee. i) Design the Use Case for booking a room and accepting payment from credit card ii) Organize the requirements in SRS Room booking Wise and Report Wise.	CO3, CO4	14 Marks

UNIT-III

5	a)	Explain in-detail about Architectural Patterns.	CO1	7 Marks
	b)	Discuss the steps involved in interface design.	CO5	7 Marks
		(OR)		
6		Explain the need for software measures and describe various metrics.	CO6	14 Marks

UNIT-IV

7	a)	Analyze white box and black box testing.	CO2	6 Marks
	b)	Explain the use of drivers and stubs in unit testing.	CO1	4 Marks
	c)	Identify the importance of validation test criteria.	CO3	4 Marks
		(OR)		
8	a)	Analyze who perform the validation test—the software developer or the software user? Justify.	CO2, CO4	7 Marks
	b)	Is unit testing possible or even desirable in all life cycle phases of a software development? Justify with examples.	CO6	7 Marks

UNIT-V

9	a)	Propose RMMM plan for "Staff Inexperienced" risk while developing a software project.	CO5	9 Marks
	b)	Explain about Software Reliability.	CO1	5 Marks
		(OR)		
10	a)	Compare and contract between McCall's quality factor and ISO 9126 Quality factor in Software Quality Factors.	CO2	8 Marks
	b)	Distinguish between forward engineering and reverse engineering.	CO2	6 Marks

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CODE No.: 16BT41204 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

THEORY OF COMPUTATION

[Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Convert the following Moore machine into Melay machine. CO5 14 Marks

Present State	Next State		Output
	a = 0	a = 1	
→ a	d	b	1
B	a	d	0
C	c	c	0
D	B	a	1

(OR)

2 a) Convert the following NFA to a DFA. CO5 10 Marks

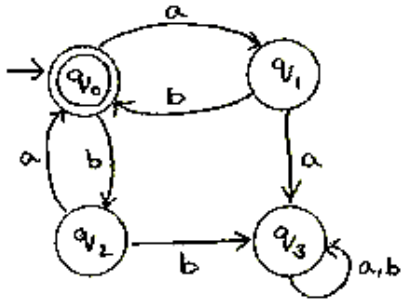
δ	a	b
p	$\{p\}$	$\{p,q\}$
q	$\{r\}$	$\{r\}$
r	$\{\phi\}$	$\{\phi\}$

b) Discuss on the relation between DFA and minimal DFA. CO2 4 Marks

UNIT-II

3 a) Construct FA equivalence to the following regular expression r = 01[((10)*+111)*+0]*1 CO3 7 Marks

b) Construct the regular expression accepted by following finite automaton. CO3 7 Marks



(OR)

4 a) Construct a DFA for the regular expression 10 + (0+11) 0*1 and optimize the states. CO3 8 Marks

b) Show that the set $\{a^{i2}\}$ is not regular. State and explain the theorem used. CO1 6 Marks

UNIT-III

5 Construct equivalent grammar in Chomsky Normal Form for the grammar G = ({S,A,B},{a,b}, {S→aAbB, A→aA|a, B→bB|b }, S} CO5 14 Marks

(OR)

6 Given the grammar G as S→0B|1A, A→0|0S|1AA, B→1|1S|0BB. Give the leftmost and rightmost derivations and parse tree to derive the string 00110101. CO1 14 Marks

UNIT-IV

7	a)	Design a PDA to accept the following CFG. S → AA/a A → SA/b.	CO3	10 Marks
	b)	Explain properties of Context Free Languages.	CO1	4 Marks
		(OR)		
8	a)	Explain in detail about the model of Linear Bounded Automata.	CO1	8 Marks
	b)	Compare NFA and PDA.	CO2	6 Marks

UNIT-V

9		Design a Turing Machine to recognize the language. $L=\{ 1^n2^n3^n \mid n \geq 1\}$	CO3	14 Marks
		(OR)		
10		Design a Turing Machine which can multiply two positive integers.	CO4	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

CONTROL SYSTEMS

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

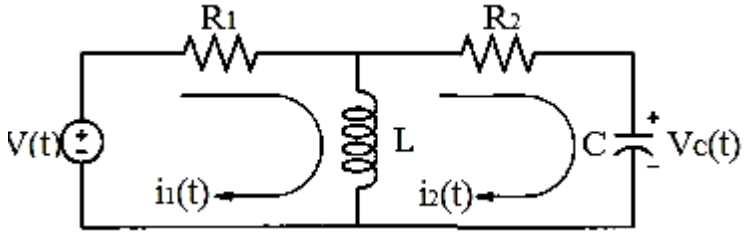
Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss the rules implemented for the reduction of a given block diagram	CO1	7 Marks
	b)	Compare open loop and closed loop control system performance.	CO2	7 Marks

(OR)

2	a)	State Mason's gain formula for deriving transfer function of a system.	CO1	6 Marks
	b)	Determine the transfer function $\frac{I_2(s)}{V(s)}$ for the electrical system shown in figure below.	CO2	8 Marks



UNIT-II

3	a)	Derive the expression for the time response of an under damped second order system when subjected to unit step input.	CO2	7 Marks
	b)	A unity feedback system is characterized by the open-loop transfer function $G(s) = \frac{1}{s(0.5s+1)(0.2s+1)}$. Determine the steady-state errors for unit-step, unit-ramp and unit-acceleration inputs	CO4	7 Marks

(OR)

4	a)	Sketch the root locus plot for a unity feedback system with an open loop transfer function $G(s) = \frac{K}{s(s+2)(s+4)}$.	CO5	7 Marks
	b)	Determine the stability of the system represented by the characteristic equation $\mathbf{S^6+2S^5+S^4+2S^3+3S^2+4S+5=0}$. If the system is found unstable, then determine the number of roots of the characteristic equation in the right-half of the s-plane.	CO2	7 Marks

UNIT-III

5		Sketch the Bode plot showing the gain magnitude in dB and phase angle in degrees as a function of log frequency for the transfer function $G(s)H(s) = \frac{2000}{s(s+2)(s+100)}$. Determine the gain crossover frequency, phase crossover frequency, gain margin and phase margin. Also, determine the gain and the corresponding phase margin for a gain crossover frequency of 50 rad/sec.	CO5	14 Marks

(OR)

6		Sketch the Nyquist plot and there from determine the stability of the closed-loop system whose open-loop transfer function is given by $G(s)H(s) = \frac{K(s+4)}{s^2(s+1)}$.	CO5	14 Marks

UNIT-IV

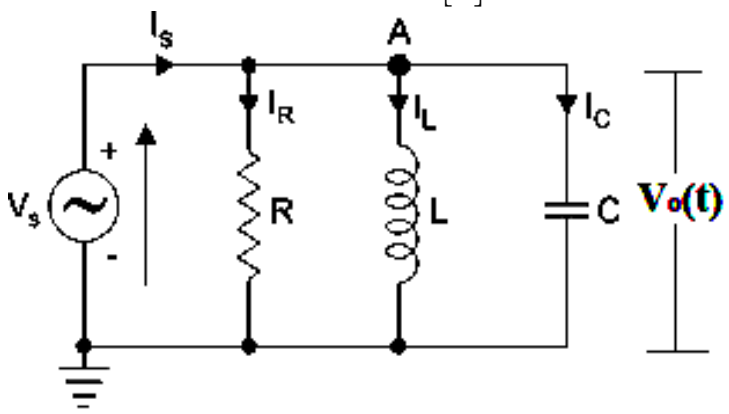
7	a)	Explain the effect of PD controller on time response characteristics of a second order system.	CO1	7 Marks
	b)	Briefly explain the types of compensators in design aspects of a control system in frequency response analysis.	CO1	7 Marks

(OR)

8		Consider the unity feedback system whose open loop transfer function is $G(s) = \frac{K}{S(S+1)(0.1S+1)}$. Design a phase-lead compensator to meet the following specifications (i) Velocity error constant $K_v = 10\ S^{-1}$, (ii) Phase Margin = 35^0.	CO3	14 Marks

UNIT-V

9		Obtain the state model for the electrical system shown in figure below. Also, find the solution for the state equation with R=5Ω, L=10mH and C=2μF. Assume initial state vector $X(0) = \begin{bmatrix} 0 \\ 1 \end{bmatrix}$.	CO4	14 Marks



(OR)

10	a)	Explain the Kalman's test for determining controllability and observability of a system.	CO1	7 Marks
	b)	Explain the concept of conversion of state model in to transfer function of a control system and vice versa.	CO1	7 Marks

CODE No.: 16BT51202 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC-16) Supplementary Examinations December - 2018

OBJECT ORIENTED ANALYSIS AND DESIGN

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the importance of UML in software industry.	CO5	7 Marks
	b)	Illustrate waterfall model for modeling the system.	CO1	7 Marks
		(OR)		
2		Design classes for health insurance policy.	CO5	14 Marks

UNIT-II

3		Create classes for implementing android mobile camera. The Camera and Gallery apps that come with Android 4.2 (still called Jelly Bean) have evolved into powerful tools for taking, viewing, editing, and sharing photos.	CO4	14 Marks
		(OR)		
4	a)	Explain sample, anonymous, orphan and multi object instances.	CO1	7 Marks
	b)	Design class diagram for Gmail application.	CO4	7 Marks

UNIT-III

5		Distinguish between Sequence diagram and Collaboration diagram with its modeling techniques.	CO2	14 Marks
		(OR)		
6		Differentiate forward and reverse engineering for sequence and collaboration diagram.	CO2	14 Marks

UNIT-IV

7	a)	Develop a State Chart template with an example.	CO3	7 Marks
	b)	Model state chart diagram for water phases (Solid, Liquid and Gas).	CO3	7 Marks
		(OR)		
8	a)	Identify the contents of state machine diagram for micro oven.	CO3	7 Marks
	b)	Apply modeling techniques of state chart diagram with example.	CO3	7 Marks

UNIT-V

9	a)	Summarize on Application Programming Interface.	CO1	7 Marks
	b)	Explain how to model the client / server system and embedded system.	CO1	7 Marks
		(OR)		
10	a)	Define node.	CO1	2 Marks
	b)	Explain the different types of nodes.	CO1	8 Marks
	c)	What relation exists between nodes and components?	CO1	4 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2019

ENGINEERING HYDROLOGY

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the various practical applications of hydrology.
b) Describe the various types of precipitation.

2. a) Explain any one type of automatic rain range.
b) Describe various methods of computing average rainfall over a basin.

3. a) Discuss various methods of reducing evaporation form a water body.
b) Define infiltration and infiltration capacity rate. Discuss the various infiltration equations.

4. a) What is a flow mass curve? How is it constructed?
b) What are the uses of a flow duration curve?

5. a) What is a hydrograph? Explain the various components of a typical hydrograph with a neat sketch.
b) The peak of flood hydrograph due to a 3-h duration isolated storm in a catchment is 270m^3/s. The total depth of rainfall is 5.9cm. Assuming an average infiltration loss of 0.3cm/h and a constant base flow of 20 m^3/s, estimate the peak of the 3-h unit hydrograph (UH) of this catchment. If the area of the catchment is 567km^2, determine the base width of the 3-h unit hydrograph by assuming it to be triangular in shape.

6. What is reservoir routing? Explain I.S.D and Modified Pulse method.

7. a) Define the terms porosity, specific yield, permeability, transmissivity and storage coefficient.
b) A 30cm well fully penetrates a confined aquifer 30m deep. After a long period of pumping at a rate of 1200 lpm, the draw downs in the wells at 20 and 45m from the pumping well are found to be 2.2 and 1.8m respectively. Determine the transmissibility of the aquifer. What is the draw down in the pumped well?

8. Differentiate between shallow dug wells and deep dug wells. How the dug well is Constructed? Enumerate the methods which are used for determining the yield of dug wells. Discuss briefly any one of these methods.

CODE No.:10BT50104 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2019

SOIL MECHANICS

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. For constructing an embankment, the soil is transported from a borrow area using a truck which can carry 6m^3 of soil at a time. With the following details, determine the number of truck loads of soil required to obtain 100m^3 of compacted earth fill and the volume of borrow pit.

2. a) Explain the procedure to determine the in-situ density of soil using the sand replacement method.
b) The liquid limit and plastic limit of a soil are 40% and 25% respectively. Classify the soil according to Indian Standard Classification system.

3. a) What are the factors affecting permeability? Explain the effect of each factor on permeability.
b) A constant head test was conducted on a sand sample of 250mm length and 2000mm^2 in area. The head loss was 500mm and the discharge was found to be 260cc in 130 seconds. Determine the coefficient of permeability of the sand sample. Find the discharge and seepage velocities if the dry unit weight and specific gravity of the sample were 17.98kN/m^3 and 2.68 respectively.

4. a) What is quick sand condition? Derive the expression for the same.
b) A sand deposit consists of two layers. The top layer is 2.5m thick with unit weigh 8kN/m^3 and the bottom layer is 3.5m thick with saturated unit weight 21kN/m^3. The water table is at a depth of 3.5m from the surface and the zone of capillary saturation is 1 m above the water table. Draw the total pressure, neutral pressure and effective pressure variation diagrams.

5. a) What are the assumptions made in Boussinesq's theory? What are the limitations of Boussinesq's theory?
b) A circular ring footings for an overload water tank carries a load of 1000kn. Whose outer diameter is 3m and inner diameter is 1.5m. Determine the induced stress at a depth of 3. One from surface below the centre of the loaded area.

6. a) What is the purpose of and what is the principle of construction of Newmark's influence chart? How it used and what are the limitations or drawbacks?
b) A water tower is founded on a circular ring type foundation. The width of the ring is 4m and its internal radius in 8m. Assuming the distributed load per unit area as 300 kN/m^2, determine the vertical pressure at a depth of 6m below the centre of the foundation.

7. a) Define i) preconsolidation pressure ii) compression index iii) degree of saturation iv) coefficient of consolidation.
b) The liquid limit of a normally consolidated clay sample is 58%. At a stress of 100kN/m^2, the void ratio is 1.05. Calculate the void ratio if the stress is increased to 200kN/m^2. If the clay layer thickness is 5m, what is the total settlement?

8. The results for triaxial tests conducted on three samples of a soil are given below. Obtain the shear strength parameters of the soil.

Cell pressure (kN/m^2)	100	200	450
Deviator stress (kN/m^2)	375	575	973

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2019

THERMAL ENGINEERING - II

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Draw the T-s and h-s diagrams of reheat cycle and obtain the relation for thermal efficiency from the basic principles.
b) In a steam power plant the condition of steam at inlet to the turbine is 20 bar, 390°C and the condenser pressure is 0.1 bar. Two feed-water heaters operate at optimum temperatures of 150°C and 100°C. Determine the quality of steam at turbine exhaust and cycle efficiency.

2. a) Explain the working principle of a Babcock and Wilcox boiler with the help of a neat sketch.
b) Distinguish between fire tube and water tube boilers.

3. a) What do you mean by a super saturated flow? Explain with the help of h-s diagram.
b) Dry saturated steam enters a steam nozzle at a pressure of 15 bar and is discharged at a pressure of 2.0 bar. If the dryness fraction of discharge steam is 0.96, what will be the final velocity of steam. Neglect initial velocity of steam. If 10% of heat drop is lost in friction, find the percentage reduction in the final velocity.

4. a) The speed of a single stage impulse turbine is 3000 r.p.m and the mean blade diameter is 1 meter. The nozzle of the turbine is inclined at 20° to the plane of the wheel and the moving blade inlet and exit angles are 35° and 30°. Assuming a friction factor (blade velocity coefficient) of 0.8, determine i) the power developed for a steam consumption rate of 9000 kg/hr. ii) the blade or diagram efficiency. iii) the axial thrust. Assume that the steam enters the blades without shock.
b) What are the differences between impulse and reaction turbines? Explain.

5. a) Write a short note on 'bleeding of steam turbines'.
b) Explain the State point locus and reheat factor.

6. a) Compare Jet and Surface condensers.
b) Explain the effects of air leakage in condensers.

7. a) In a gas turbine power plant air enters the compressor at 1 bar and 15^0 C. The pressure ratio is 5:1. The temperature of the gas at the inlet of turbine is 800^0 C. The mass flow rate is 10 kg/s. Calculate i) compressor power and turbine power ii) thermal efficiency. Take Cp_a = 1.005 kJ/kg-K and Cp_g = 1.15 kJ/kg-K.
b) What are the advantages of gas turbines over I C Engines?

8. a) Explain the working principle of a Pulse Jet engine with a neat sketch.
b) Enumerate the applications of Rocket propulsion.

CODE No.:10BT50421 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2019

ELECTROMAGNETIC THEORY

[Electronics and Instrumentation Engineering, Electronics and Control Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Show that the electric field intensity due to an infinite sheet of charge is independent of the distance of the point from sheet.
b) A line charge, PL =50nc/m is located along the line x = 2, y = 5, in free space. Find E at P(1,3,-4).

2. a) Explain the two Maxwell's equations for static charges and steady currents.
b) What is meant by dielectric polarization? How is it affected by changing the dielectric material?

3. a) Define and explain the significance of vector magnetic potential.
b) If the vector potential $\mathbf{A = 5(x^2+ y^2+ z^2)^{-1}Wb/m}$, find flux density B and current density J.

4. a) Write Maxwell's equations in time varying fields and static fields.
b) What are the characteristics of free space and write Maxwell's equations in free space.

5. a) Derive the relation between E and H in a uniform plane wave.
b) Derive the different wave parameters for good conductors.

6. a) Define Brewster angle. Derive Brewster angle for perpendicular polarization.
b) Define transmission coefficient and reflection coefficient. Derive expressions for it.

7. a) Differentiate Inter and Intra Electromagnetic Interference.
b) Explain the effects of Electromagnetic Interference.

8. Write short notes on:
i) Cable Shilding grounding.
ii) Electrical Bonding.

CODE No.:10BT50501 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2019

DESIGN AND ANALYSIS OF ALGORITHMS

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the concept of space complexity.
b) Write a short note on-Amortized analysis.

2. a) Differentiate between depth first search and breadth first traversals.
b) Explain the properties of strongly connected components.

3. a) Give the general method for divide and conquer strategy. Explain any one application that can be solved by divide and conquer.
b) Is it possible to modify the binary search algorithm to improve its performance? Justify.

4. a) Explain the applications of Greedy method.
b) Write Greedy algorithm to generate shortest path.

5. Explain optimal binary search algorithm with the help of suitable examples. Also find its time complexity.

6. a) Draw the state space tree for m coloring when n=3 and m=3.
b) Solve the 8-queens problem using backtracking.

7. a) Define the term branch and bound technique explain it with an example.
b) Discuss control abstraction for LC search.

8. a) Give properties of P, NP class problems.
b) State and prove Cook's theorem.

CODE No.:10BT50502 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2019

MICRO-PROCESSOR AND INTERFACING

[Computer Science and Engineering, Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Draw and explain the architecture of 8086 microprocessor.
b) Explain the register organization of 8086.

2. a) Write an ALP to find the even and odd numbers of given sequence?
b) Explain the physical address formation in 8086.

3. a) Draw and discuss the typical minimum mode operation in 8086.
b) With neat diagram, explain the architecture of the 8257.

4. a) Explain different modes of operations of 8255.
b) How the stepper motor can be interfaced with 8255?

5. a) How the interrupts re handled in 8086 microprocessor?
b) What is the necessity to initialize the command word in 8259?

6. a) Write briefly about different methods of data communication.
b) Draw the internal block diagram of 8251 and explain about each block in detail.

7. a) Briefly explain about RISC processors.
b) Discuss salient features of 80386 microprocessor.

8. a) How does 8051 differentiate between external and internal program memory?
b) Explain the interrupt structure of 8051.

CODE No.:10BT50503 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2019

DATABASE MANAGEMENT SYSTEMS

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Analyze the architecture of DBMS.
b) Explain DDL and DML

2. a) Describe the relationship between Entities, Attributes, Entity sets and key.
b) Write short notes on the following and give examples to each.
i) Key constraint.
ii) Participation constraint.
iii) Weak entity.

3. a) Discuss the concepts related to structural constraints of a relationship type with examples.
b) Explain the various relational algebra operators with examples.

4. a) Explain having, group by and distinct clauses in SQL.
b) Consider the following schema:
suppliers(sid:integer, sname:string,address:string)
parts(pid:integer,pname:string,color:string)
catalog(sid:integer,pid:integer,cost:real)
Write the following SQL queries.
i) Find the pnmaes of parts for which there is some supplier.
ii) Find sames of suppliers who supply every green part.
iii) Find sid of supplier who supplies maximum number of parts.
iv) Find the number of Suppliers presently supplying the parts.

5. a) List out problems caused by Redundancy.
b) Explain the Boyce-Codd Normal Form and 3rd Normal form with an example.

6. a) Describe about recoverability in detail.
b) Write short notes on transaction definition in SQL.

7. a) Explain optimistic concurrency protocol.
b) Explain log based recovery.

8. a) What is RAID system and how it improves the performance and reliability.
b) Describe the B+ tree insertion algorithm with an example. How it eliminates overflow pages?

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2019

OPERATING SYSTEMS

[Computer Science and Engineering, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the operating system structures and its components.
b) Describe Inter process communication in client server systems.

2. Discuss the attributes of the process. Describe the typical elements of process control block.

3. What is dining-philosophers problem? Devise an algorithm to solve this problem.

4. Explain recovery from Deadlock using Bankers algorithm.

5. a) Explain the difference between internal and external fragmentation.
b) What is virtual memory? Why is it required? How can it be implemented?

6. a) How free space is managed using bit vector implementation?
b) Explain different free space management techniques.

7. What are the different disk scheduling algorithms for space allocation? Explain any one of them in detail.

8. What is Domain protection? Explain how domain protection is done in UNIX and MULTICS.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations June - 2019

THEORY OF COMPUTATION

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the construction steps involved in converting an NFA to DFA.
b) Design a DFA which accepts set of all strings contains 1100 as substring, where $\sum = \{0, 1\}$.

2. a) Formally define Mealy and Moore machines.
b) Construct Moore machine to output number modulo 3 where number is the value of the binary string input.

3. a) Construct a finite automaton for the regular expression *aa(a+b)*abb*.
b) Write the applications of regular expressions.

4. a) Obtain a CFG to generate unequal number of a's and b's.
b) Obtain a CFG to obtain balanced set of parentheses.(i.e every left parentheses should match with the corresponding right parentheses).

5. a) Simplify the following grammar S→A/0C1 , A→B/01/10 ,C→C0/ Є.
b) Convert the given CFG into GNF S→ abSb | aa.

6. a) Construct PDA which accepts $L = \{a^n b^n - n \geq 0\}$.
b) Give PDA that accepts the language L={W#W^R / W in {0+1}*}.

7. a) What is counter machine and discuss counter machine are turning equivalent?
b) Design turning machine to accept strings of the language defined as {$a^n b^n$ / n ≥ 1}.

8. a) Explain about P and NP problems.
b) Explain about Undecidability of PCP problem.

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CODE No.:10BT50103 SVC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2018

ENGINEERING HYDROLOGY

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the various practical applications of hydrology.
b) Describe the various types of precipitation.

2. a) Describe the three methods of determining the average depth of rainfall over an area.
b) The average annual rainfall of 5 rain gauges in a basin are 89, 54, 45, 41 and 55cm. If the error in the estimation of basin mean rainfall should not exceed 10%, how many additional gauges should be installed in the basin?

3. a) Discuss various methods of reducing evaporation form a water body.
b) Define infiltration and infiltration capacity rate. Discuss the various infiltration equations.

4. Explain the various factors which affect runoff.

5. a) Sketch a typical hydrograph resulting from an isolated storm and identify the features of the same.
b) Given below are the ordinates of a 4h unit hydrograph of a basin in m^3/s at one hour intervals.
4, 25, 44, 60, 70,61, 52, 45, 38, 32, 27, 22, 18, 14, 11, 8, 6 ,4, 2, 1.
What is the area of the basin?

6. a) What are envelope curves? How are they prepared?
b) Explain the method of determining the Muskingum parameters K and X of a reach from a pair of observed inflow and out flow hydrographs.

7. a) Discuss the significance of stream gauging. Explain the procedure of stream flow measurement by area-velocity method.
b) Write a note on i) envelope curve ii) rational formula of estimating floods.

8. a) Describe various types of tube wells.
b) During a recuperation test, the water in an open well was depressed by pumping by 2.5m and it recuperated 1.8m in 80 minutes. Calculate the yield from a well 4m diameter Undera depression head of 3m.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2018

SOIL MECHANICS

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What are the clay minerals? How does clay adsorb water? Explain.
b) The porosity of a soil is 0.35. If specific gravity = 2.66, calculate (i) saturated unit weight (ii) saturated moisture content and (iii) moisture content when moist unit weight -17.6kso/m^3.

2. a) Define: (i) sensitivity (ii) Thixotropy (iii) Density index (iv) consistency.
b) A soil sample has 80% of particles fines than 10mm, 38% fines than 1.0mm, 12% fines than 0.3mm, 7.5% fines than 0.01 mm and 4% fines than 0.001 mm. Draw grain size distribution curve. Determine percent ground, percent sand percent fine fraction. Classify the soil as per Indian soil classification system.

3. a) What are the methods of estimation of capillary raise in soil? What is the range of capillary raise in different soils?
b) Determine the average vertical and horizontal permeability of a soil mass made up of three horizontal strata, each 1m thick, if the coefficient of permeability of three strata are $1x10^{-2}$ cm/s, $3x10^{-2}$ cm/s and $8x10^{-3}$cm/s.

4. a) Enumerate effective stress principle. Is effective stress a physically existing one or not? Explain with the help of a neat sketch the concept of effective stress, total stress and pore water pressure.
b) Explain the step by step procedure for constructing top flow line in an eastern embankment with horizontal drainage filter. What are the corrections to be applied?

5. a) Explain how the pressure distribution diagrams can be prepared by Boussinesq's stress theory.
b) A load of 1000kN acts as a point load at the surface of a soil mass. Estimate the stress at a point 3m below and 4m away from the point of action of the load by Boussinesq's formula. Compare the value with the result from Westergaard's theory.

6. a) List out the various factors that influence the compaction of soils, show their influence with illustrative sketches of compaction curves.
b) The following data are obtained in a compaction test.

Water content (%)	2.0	4.2	5.5	6.6	7.5	10.0
Wet density, (kN/m^3)	20.2	20.8	21.7	22.0	22.1	22.0

Determine OMC and MDD. Draw zero air voids line. Take G = 2.65.

7. a) Differentiate between i) Floating and fixed ring consolidometer.
ii) Primary and secondary compression.
b) In a consolidation test on a soil, the void ratio of sample decreased from 1.25 to 1.1 when pressure is increased from 200kN/m^2 to 400kN/m^2. Calculate the coefficient of consolidation if coefficient of permeability is $8x10^{-8}$ cm/s.

8. a) Explain the following terms:
i) Critical void ratio. ii) Sensitivity. iii) Liquifaction. iv) Pore pressure coefficients.
b) A cylindrical specimen of saturated soil fails under an axial stress 150kN/m^2 in an unconfined compression test. The failure plane makes an angle of 52^0 with the horizontal. Calculate the cohesion and angle of internal friction of the soil.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2018

THERMAL ENGINEERING - II

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What are the different methods of improving efficiency of Rankine cycle? Explain them with suitable diagrams.
b) A steam power cycle uses the following cycle. Steam at boiler outlet 150 bar, 550°C, with reheat at 40 bar to 550°C, condenser at 0.1 bar. Estimate the quality of steam at turbine exhaust and cycle efficiency.

2. a) Explain the working principle of a Babcock and Wilcox boiler with the help of a neat sketch.
b) Distinguish between fire tube and water tube boilers.

3. a) What do you mean by a super saturated flow? Explain with the help of h-s diagram.
b) Dry saturated steam enters a steam nozzle at a pressure of 15 bar and is discharged at a pressure of 2.0 bar. If the dryness fraction of discharge steam is 0.96, what will be the final velocity of steam? Neglect initial velocity of steam. If 10% of heat drop is lost in friction, find the percentage reduction in the final velocity.

4. a) A single row impulse turbine develops 132.4kW at a blade speed of 175m/s, using 2kg of steam per sec. steam leaves the nozzle at 400m/s. velocity coefficient of the blade is 0.9. steam leaves the turbine blades axially. Determine nozzle angle, blade angles at entry and exit, assuming no shock.
b) Differentiate the impulse and reaction turbine.

5. a) Write a short note on 'bleeding of steam turbines'.
b) Explain the state point locus and reheat factor.

6. a) Explain the working principle of a low level jet condenser with a neat sketch.
b) Discuss the merits and demerits of surface condensers over jet condensers.

7. In a gas turbine power plant air enters the compressor at 1 bar and 15^0 C. The pressure ratio is 5:1. The temperature of the gas at the inlet of turbine is 800^0 C. The mass flow rate is 10 kg/s. Calculate i) compressor power and turbine power ii) thermal efficiency. Take Cp_a = 1.005 kJ/kg-K and Cp_g = 1.15 kJ/kg-K.

8. a) A turbojet engine is being used to propel an aeroplane with the drag of 3900N and the coefficient of drag is 0.01835. The wing area is 21.25m^2, the air consumption per second of the engine is 14.5kg/s and thrust developed is 8900N. Calculate the flight velocity and effective jet velocity and also specific thrust.
b) Discuss the advantages and limitations of liquid propellant rockets over solid propellant rockets.

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CODE No.:10BT50304 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2018

DESIGN OF MACHINE ELEMENTS - I

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What are various stages involved in the design of a machine component?
b) Explain Design Specifications.

2. a) Write short notes on maximum principal stress theory and maximum distortion energy theory and mention their applications.
b) A cylindrical shaft made of steel of yiled strength 700MPa is subjected to static loads consisting of bending moment of 10kN-m and a torsional moment 30kN-m. Determine the diameter of the shaft using two different theories of failure, and assuming a factor of safety of 2. Take E = 210GPa and Poisson's ratio = 0.25.

3. A shaft of diameter 50mm is to be subjected to a torque that varies from -1.0 kN-m to 2.0kN-m. Calculate the factor of safety, if the endurance limit and the yield point are 150MPa and 300MPa respectively.

4. Design a double riveted single cover butt joint to connect to plates of thickness 8mm. The permissible stresses in tension, shear and crushing are, respectively, 75MPa, 50MPa and 125MPa.

5. a) What is a bolt of uniform strength? Give sketches.
b) The cylinder head of an air compressor is held in position by steel stud bolts. The cylinder bore is 400mm in diameter and the maximum pressure is 0.75MPa. Assuming that no packing material is necessary, determine the number and size of the stud bolts to be used. The permissible tensile stress may be taken as 250MPa.

6. a) Describe the purpose of gib in cotter joint. What are the applications of cotter joints?
b) Design a knuckle joint to transmit 140kN with permissible stresses in tension; shear and compression are 75MPa, 60MPa and 150MPa respectively.

7. a) Explain under what circumstances are hollow shafts are preferred over solid shafts.
b) A propeller shaft is required to transmit 45KW power at 500 r.p.m. It is a hollow shaft having inside diameter 0.6 times of outside diameter. It is made of plain carbon steel and the permissible shear stress is 84N/mm^2. Calculate the inside and outside diameters of the shaft.

8. Design a flange coupling to connect two shafts which are to transmit 4kW at 2000 r.p.m.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2018

ANTENNAS AND WAVE PROPAGATION

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. Define the following terms related to antennas:
i) Gain.
ii) Directivity.
iii) Radiation resistance.
iv) Effective area.
v) Effective length.
vi) Efficiency.
vii) Beam width.

2. a) Derive the expression for power radiated and find the radiation resistance of a half wave dipole.
b) How many distant point sources can a receiving antenna with directivity D resolve?

3. a) Derive the condition for directivity of end fire array with increased directivity.
b) A uniform linear array consists 16 isotropic point sources with a spacing of $\lambda/4$. If the phase difference is 90^0, calculate
i) HPBW.
ii) Directivity.
iii) Beam Solid Angle.
iv) Effective Aperture.

4. a) What is Yagi-uda Antenna? Explain the construction and operation of Yagi-uda Antenna. Also explain its general characteristics.
b) Differentiate between circular and rectangular horn antenna.

5. a) List the characteristics of Microstrip antenna.
b) Calculate the power gain of paraboloid of mouth diameter 10λ.

6. a) Define the term: zoning and distinguish between curved surface zoning and plane surface zoning of lens antenna. Discuss their merits and demerits.
b) With neat set up, explain the absolute method of measuring the gain of an antenna.

7. a) Derive the expression for field strength in case of space wave propagation.
b) What is signal fading? List the various types of fading and explain.

8. a) Derive the expression for the Maximum Usable Frequency assuming the earth to flat.
b) Explain the terms.
i) Skip distance.
ii) Optimum working frequency.
iii) Lowest usable frequency.

CODE No.:10BT50501 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2018

DESIGN AND ANALYSIS OF ALGORITHMS

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the need of studying algorithms.
b) Write notes on space complexity of algorithms.

2. a) Write and explain the control abstraction for divide and conquer.
b) Suggest refinements to Mergesort to make it in-place.

3. a) Write the Quicksort algorithm and illustrate the operation of the algorithm with an example.
b) Write notes on finding maxima and minima.

4. Explain the Dijkstra's algorithm for single source shortest path problem with an example.

5. a) Explain traveling sales person problem with Dynamic programming.
b) Describe any two shortest path algorithms.

6. a) Describe coloring of a graph with an example.
b) Solve the n-queens problem using backtracking.

7. a) Define the term branch and bound technique. Explain it with an example.
b) Discuss control abstraction for LC search.

8. a) Explain the satisfiability problem and write the algorithm for the same.
b) Differentiate between NP-Complete and NP-Hard.

CODE No.:10BT50502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2018

MICRO-PROCESSOR AND INTERFACING

[Computer Science and Engineering, Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Give the 8085 compatible flags of 8086 processors. Discuss the design of each flag.
b) Discuss the addressing modes provided by 8086 and explain with examples.

2. a) Write an ALP to find the even and odd numbers of given sequence.
b) Explain the physical address formation in 8086.

3. a) Explain interfacing of EPROMS and SRAMS to 8086 processor.
b) Explain how the 8237 DMA controller transfers 64K bytes of data per channel with eight address lines.

4. a) Explain the control word format of 8255 in BSR mode.
b) Interface a seven segment display unit to 8086 through port A of 8255. Write a program to display 0 to F with 1 sec delay.

5. a) Draw and discuss the internal architecture of 8259A.
b) What is interrupt vector table of 8086? Explain it's structure.

6. a) Explain the working of TXRDY and RXRDY signals in 8251 USART.
b) Draw and discuss the status word format of 8251.

7. a) Briefly explain about RISC processors.
b) Discuss salient features of 80386 microprocessor.

8. a) When 8051 is reset, all interrupts are disabled. How to enable these interrupts? Give the 8051 instruction format.
b) How will you double the baud rate in 8051? Explain the memory structure of 8051.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2018

DATABASE MANAGEMENT SYSTEMS

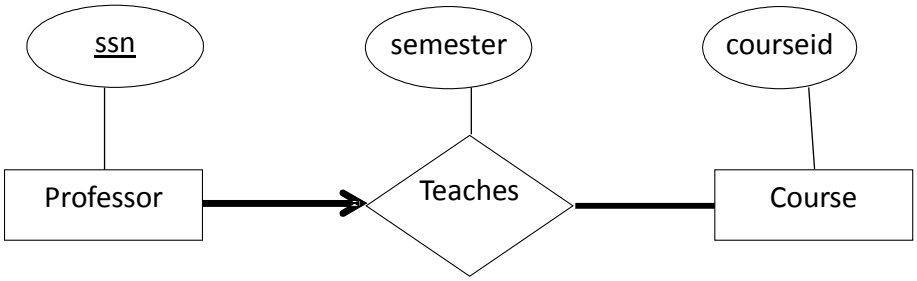
[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Compare file system versus a DBMS .
b) Discuss about levels of data abstraction in DBMS.

2. a) List the entity sets and their primary keys of the following diagram.



b) Discuss about ternary relationship.

3. a) Discuss the concepts related to structural constraints of a relationship type with examples.
b) Explain the various relational algebra operators with examples.

4. a) Write short notes on nested queries.
b) Describe about complex integrity constraints in SQL.

5. a) Given a relation R with four attributes R = {A B C D} and the following FD, identify the candidate keys for R and the highest normal form.
i) **C→ D, C→ A, B→ C** ii) **B→ C, D→ A**
b) Define multi-valued dependency. Explain 4NF with an example.

6. a) What are the ACID properties? Define automicity, consistency, isolation and durability and illustrate them with suitable examples.
b) What is locking protocol? Describe the Strict 2 - phase locking protocol.

7. a) Describe and compare deadlock detection and prevention schemes. Why the detection schemes are most commonly used?
b) What is a conflict serializable schedule and explain with example.

8. a) What is RAID system and how it improves the performance and reliability.
b) Describe the B+ tree insertion algorithm with an example. How it eliminates overflow pages?

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2018

THEORY OF COMPUTATION

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Find NFA which accepts the set of all strings over {0, 1} in which the number of occurrences of 0 is divisible by 3 and the number of occurrences of 1 is divisible by 2.
b) Draw the transition diagram for a NFA which accepts all strings with either two consecutive 0's or two consecutive 1's.

2. a) State and explain the closure properties of regular sets.
b) Check whether the following languages are regular or not
i) $L = \{WW^R \mid W \text{ is a string of binary numbers}\}$. ii) $L = \{a^{2i} \mid i \geq 0\}$.

3. a) Prove that Regular Sets are close under Union, Concatenation, kleene Closure.
b) Explain context free grammar and construct a CFG to generate set of palindromes over alphabet {a, b}.

4. a) Construct NFA for the following Grammars
i) S→Aa/Bb , A→Aa/a , B→Bb/b. ii) S→A0/B1 , A→A0/0 , B→B1/1.
b) Check whether the given grammar is Ambiguous or not and derive "**aabbabbaba**" using LMD or RMD S→ASA/ASB/BAS/A/B, A→AS/SA/a/aS, B→b/BS/SB/bS.

5. a) Simplify the grammar S→A/0C1, A→B/01/10, C→C0/ Є.
b) Convert the given CFG into GNF S→ abSb | aa

6. a) Give the formal definition of a Push Down Automata.
b) Construct Push Down Automata to recognize the language of equal number of a's and b's.

7. a) What is counter machine and discuss counter machine are turning equivalent?
b) Design turning machine to accept strings of the language defined as **$\{a^n b^n / n >= 1\}$**.

8. a) What do you mean by *decidable* and *undecidable* problems? Give an example.
b) What is the difference between NP hard and NP complete problems?

CODE No.:14BT4HS01 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

BUSINESS COMMUNICATION AND PRESENTATION SKILLS

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		What makes for effective managerial communication? Additionally, what traits make a manager ineffective?	14 Marks
		(OR)	
2		Why are some organizations very effective in being able to manage their internal affairs and communicate well with their stakeholders?	14 Marks

UNIT-II

3		What is non-verbal communication? Explain in detail the types of non-verbal communication.	14 Marks
		(OR)	
4	a)	Explain how the use of colour communicates non-verbal messages.	7 Marks
	b)	Explain the role of eye contact in communication.	7 Marks

UNIT-III

5		What are the different forms of business messages? Which in your opinion is most effective and why?	14 Marks
		(OR)	
6		Write a business report that looks at the possibility of exporting computers and peripherals to Philippines.	14 Marks

UNIT-IV

7		What is the importance of body language in group discussion? Discuss in detail.	14 Marks
		(OR)	
8		Write the do's and don'ts in a group discussion.	14 Marks

UNIT-V

9	a)	What is a Resume? What is its main function?	7 Marks
	b)	Discuss the features of a good Resume.	7 Marks
		(OR)	
10		What are the various types of interviews? How do you screen the job applicants?	14 Marks

CODE No.:14BT40503 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

DESIGN AND ANALYSIS OF ALGORITHMS

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	How the Performance can be analysed? Explain with examples.	7 Marks
	b)	Explain in detail about the various Asyptotic Notations.	7 Marks
		(OR)	
2		Show that $f_1(n)+f_2(n) = O(\max(g_1(n), g_2(n))$ where $f_1(n) = O(g_1(n)$ and $f_2(n) = O(g_2(n)$ by clearly indicating the concepts.	14 Marks

UNIT-II

3		Explain about BFS Traversal in detail with an example.	14 Marks
		(OR)	
4	a)	Define level order traversal and write an algorithm to traverse a binary tree in the level order.	7 Marks
	b)	Explain Strassen's algorithm for Matrix Multiplication.	7 Marks

UNIT-III

5	a)	Write Greedy algorithm to generate the Shortest path.	7 Marks
	b)	Explain the Kruskal's algorithm with an example.	7 Marks
		(OR)	
6	a)	Show that greedy method generates optimal loadings.	7 Marks
	b)	Explain about dynamic programming.	7 Marks

UNIT-IV

7	a)	Explain the general method of Branch and Bound.	7 Marks
	b)	Explain the principles of LIFO Branch and bound.	7 Marks
		(OR)	
8	a)	Write the general method of backtracking.	7 Marks
	b)	Give a note on FIFO branch and bound solution.	7 Marks

UNIT-V

9	a)	Explain the classes of P and NP.	7 Marks
	b)	Explain the satisfiability problem and write the algorithm for the same.	7 Marks
		(OR)	
10		State and explain about Cook's theorem in detail.	14 Marks

CODE No.:14BT50101 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

STRUCTURAL ANALYSIS - II

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 A UDL of 2kN/m and 5m long crosses a simply supported beam of span 20m from left to right. Calculate maximum shear force, bending moment at a section 8m from the left support and obsolete maximum bending moment. 14 Marks

(OR)

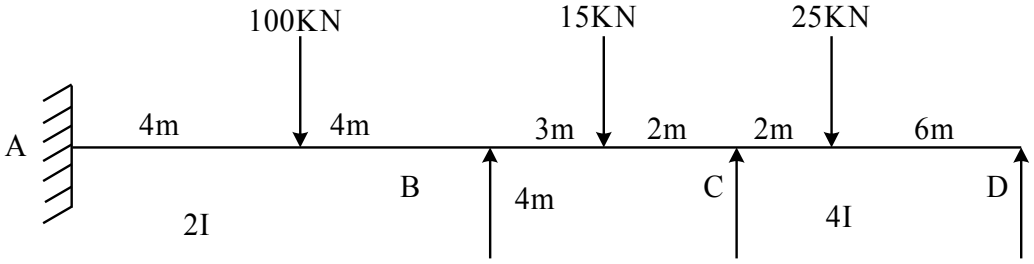
2 Two point loads of 6kN and 8kN spaced apart cross a girder of 18m span, the 6kn load leading from left to right. Construct the maximum S.F. and B.M. diagrams, stating the absolute maximum values. 14 Marks

UNIT-II

3 Explain in detail about the step by step procedure for analysis of continuous beam by slope deflection method. 14 Marks

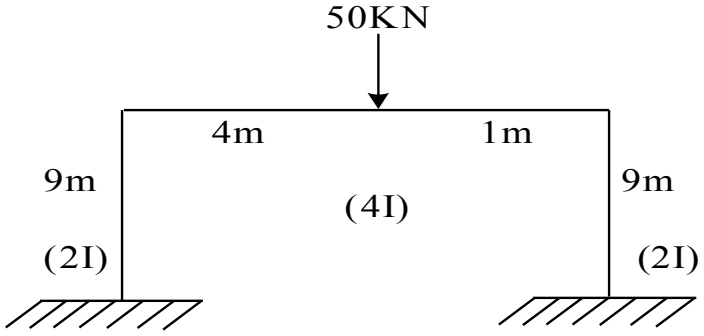
(OR)

4 Analyse the continuous beam shown in figure using moment distribution method of analysis and sketch the SFD and BMD. 14 Marks



UNIT-III

5 Analyse the portal frame shown in figure by Kani'smethod and sketch the BMD. 14 Marks



(OR)

6 A freely supported beam of span L carries a central load W. The sectional area of the beam is so designed that the moment of inertia of the section increases uniformly from I at ends to 1.5I at the middle. Calculate the central deflection. 14 Marks

UNIT-IV

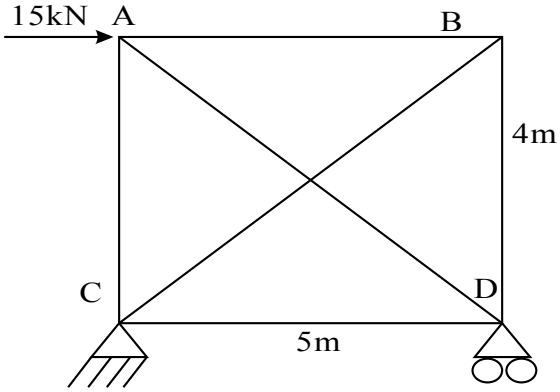
7 Explain the bracing of multistorey building frames. Draw the sketches of various bracing arrangements. 14 Marks

(OR)

8 What do you mean by Diaphragms, Cores in tall buildings? Explain the arrangement of utility cores and shear walls with the help of sketches. 14 Marks

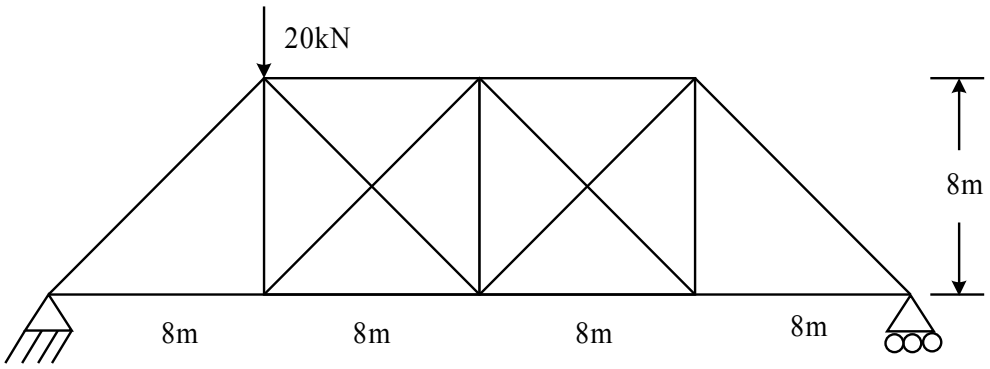
UNIT-V

9 Find the force in the member BC of the frame loaded as shown in figure. All the members have the same cross-sectional area. 14 Marks



(OR)

10 Analyse the truss shown in figure. AE is constant. 14 Marks



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

REINFORCED CEMENT CONCRETE STRUCTURES-I

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Write short notes on the following with stress diagrams. 14 Marks
i) Working stress method of design. ii) Ultimate load method of design.
iii) Limit state method of design.

(OR)

2 Design a RC rectangular cantilever beam supported over an effective span of 5m to support an imposed load of 20kN/m. Adopt M20 grade concrete and Fe 415 steel. Using working stress method. 14 Marks

UNIT-II

3 Design the reinforcement for a RCC beam to resist an ultimate moment of 300kN-m. Adopt M25 concrete and Fe 415 steel. Sketch the details. 14 Marks

(OR)

4 A rectangular reinforced concrete beam is simply supported over a span of 5m. The beam has to carry a live load of 15kN/m and a dead load of 7kN/m, in addition to its own weight Design the beam section for a maximum moment at mid span. Adopt M20 concrete and Fe 415 steel. 14 Marks

UNIT-III

5 a) Describe about interaction curve with a neat sketch. 7 Marks
b) Design a circular short column to carry an axial working load of 1200 kN. Assume the column is helically reinforced column. 7 Marks

(OR)

6 Design a circular column to carry an axial load of 2000kN. The column has an effective length of 3m. Use M 20 concrete and Fe 415 steel. 14 Marks

UNIT-IV

7 Design an isolated footing for a rectangular column 300mm x 450mm carrying an axial load of 1500 kN, the safe bearing capacity of soil may be taken as 225 kN/m^2. Use Limit State Method. 14 Marks

(OR)

8 Design a reinforced concrete rectangular combined footing for two columns each 400mm x 400mm located 4m between centres. Each column carries an axial load of 1200kN. The safe bearing capacity of the soil is 250kN/m^2. Use M 25 concrete and Fe 415 steel. 14 Marks

UNIT-V

9 Design a one way RC slab supported on masonry walls with a clear span of 3.75m, to support a live load of 4kN/m^2 and finishes of 1.5kN/m^2. Use M20 concrete and Fe 415 steel. 14 Marks

(OR)

10 Design a two way slab over a room 4m x 6m is simply supported on all four sides on 230mm walls. The live load on the slab is 3kN/m^2 and finishes of 1.5kN/m^2. Use M20 concrete and Fe 415 steel. 14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

SOIL MECHANICS

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe the Classification of Coarse grained Soils.	6 Marks
	b)	Obtain the relationship between for the water content, void ratio, specific gravity and degree of saturation.	8 Marks
		(OR)	
2		A sample of clay taken from a natural stratum was found to be partially saturated and when tested in the laboratory gave the following results. Specific gravity of soil particles is 2.6, wet weight of sample is 250g, dry weight of sample is 210g and volume of sample is 150cm^3. Compute the degree of saturation, water content, porosity and void ratio using phase diagram.	14 Marks

UNIT-II

3	a)	Explain the determination of coefficient of permeability of layered soil.	7 Marks
	b)	In a falling head permeability test, the initial head is 400mm when time is zero. The head drops by 5mm in 10 minutes. Calculate the time required to run the test for the final head to be at 200mm. If the sample is 60mm in height and 50 x 100mm^2 in cross section area, calculate the coefficient of permeability value by taking the cross sectional area of stand pipe as 0.5 x 100mm^2.	7 Marks
		(OR)	
4	a)	Explain the construction of phreatic line in an earth dam with horizontal filter.	7 Marks
	b)	A sand stratum is 10m thick. The water table is 2m below ground level. The unit weights of sand layer above and below water table are 17kN/m^3 and 21kN/m^3. The capillary rise above water table is 1m. Draw the effective stress, pore pressure and total stress diagrams.	7 Marks

UNIT-III

5	a)	Discuss the basis for construction of Newmark's influence chart. How it is used?	6 Marks
	b)	A 60m high tower rests on three legs which forms an equilateral triangle of sides 8m each in plan. The load coming on each leg may be considered as equivalent to a 300kN point load. Using Boussinesq's theory, compute the vertical stress increase at a point 2m deep vertically below the centre of three legs.	8 Marks
		(OR)	
6	a)	Describe briefly about pressure bulb.	4 Marks
	b)	The four legs of a transmission tower form in plan a square of side 4m and together carry a total load of 200kN. Compute the increase in vertical stress at a depth of 3m vertically below a leg. Use bousinesq's theory.	10 Marks

UNIT-IV

7	a)	Differentiate between compaction and consolidation.	6 Marks
	b)	What is pre-consolidation pressure and describe the determination of pre-consolidation pressure.	8 Marks

(OR)

8 a) State the assumption made in Terzaghi's one dimensional consolidation theory. What do you understand by normally consolidated and over consolidated soil? 7 Marks

b) A layer of soft clay 6m thick lies under a new building and has two-way drainage. The initial over-burden pressure is 25kN/m² and the new construction puts an additional pressure of 10kN/m². If compression index = 0.5, water content = 45 % and specific gravity of solids = 2.7 for clay, compute the settlement. 7 Marks

UNIT-V

9 a) State the advantages and limitations of direct shear test. 8 Marks

b) Describe pore pressure parameters. State its importance in shear strength of soils. 6 Marks

(OR)

10 The following are the results of a Triaxial test. Determine Shear strength parameters. 14 Marks

Sample No	Cell Pressure (kN/m²)	Deviator stress (kN/m²)
1	50	350
2	100	440
3	150	530

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

ENGINEERING HYDROLOGY

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is hydrologic cycle? With a neat sketch, describe the hydrologic cycle.	8 Marks
	b)	Describe the principle of working of Symon's non-recording rain gauge with a neat sketch.	6 Marks
		(OR)	
2	a)	What factors you consider in selecting a site for a rain gauge station?	7 Marks
	b)	Give the various forms of precipitation.	7 Marks

UNIT-II

3	a)	Write short notes on infiltration indices.	7 Marks
	b)	A seven hour storm produced the rainfall intensities 4, 9, 20, 18, 13, 11, 12, 2, 8, 16, 17, 13, 6 and 1 mm/h at half an hour intervals over a basin of area 1830km^2. If the corresponding observed runoff is 36.6 million m^3. Estimate the φ-index for the storm.	7 Marks
		(OR)	
4	a)	Define ϕ - index and W-index and bring out the difference between them.	6 Marks
	b)	Discuss the various infiltration equations.	8 Marks

UNIT-III

5	a)	What is runoff? Explain the various components of runoff.	7 Marks
	b)	Explain 'flow mass curve' and 'flow duration curve'.	7 Marks
		(OR)	
6	a)	Discuss the various physiographic factors which affect runoff.	7 Marks
	b)	Explain the moving-boat method of discharge measurement.	7 Marks

UNIT-IV

7	a)	Sketch a typical hydrograph resulting from an isolated storm and identify the features of the same.	7 Marks
	b)	Define unit hydrograph. What are the assumptions underlying the unit hydrograph theory? How do they limit the applicability of unit hydrograph?	7 Marks
		(OR)	
8	a)	What are envelope curves? Explain.	7 Marks
	b)	Explain Modified Puls method.	7 Marks

UNIT-V

9	a)	Explain the following : i) Sheet erosion. ii) Channel erosion.	7 Marks
	b)	Discuss sediment yield from watersheds.	7 Marks
		(OR)	
10	a)	Define trap efficiency of reservoir. Describe how the time required for the reservoir to fill up with sediments is calculated.	7 Marks
	b)	Explain various reservoir sedimentation control methods.	7 Marks

CODE No.:14BT50201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

CONTROL SYSTEMS

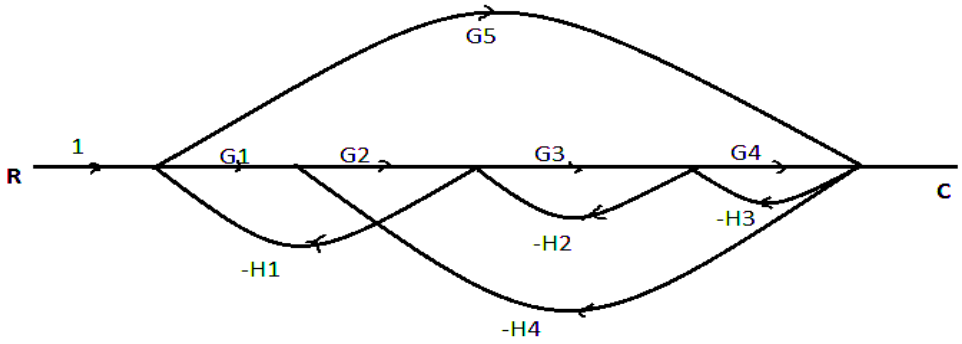
[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Find the transfer function of the signal flow graph shown in figure by using Mason's gain formula. 7 Marks



b) Derive an expression for the transfer function of a filed controlled DC servo motor. 7 Marks

(OR)

2 a) Determine the transfer function for the given electrical circuit shown below. 7 Marks

b) Derive the transfer function for armature controlled DC motor with neat sketch and specify the assumptions. 7 Marks

UNIT-II

3 a) Obtain the time response for First order system w.r.s input test signals. 8 Marks
b) Explain about generalized error constants in control systems. 6 Marks

(OR)

4 a) Explain the Time domain specifications for second order system.. 7 Marks
b) Explain the effect of proportional and integral controllers on the performance of the system. 7 Marks

UNIT-III

5 a) Explain the rules to construct the root locus for the open loop transfer function. 7 Marks
b) Sketch the root locus of the open loop transfer function given below. 7 Marks

$$G(s)H(s) = \frac{K}{S(S+2)(S^2+2S+5)}.$$

(OR)

6 Draw the complete root locus of the system with $G(s)H(s) = \frac{K(s^2 + 4s + 5)}{s^2(s^2 + 6s + 9)}$, determine the range of K for which system is stable. 14 Marks

UNIT-IV

7 a) Derive expressions for Resonant peak magnitude and resonant frequency. 8 Marks

b) Derive the transfer functions for Lead and Lag compensation networks. 6 Marks

(OR)

8 a) The open loop transfer function of a unity feedback control system is given by G(s)= $\frac{5}{S(1 + 0.2S)}$ 8 Marks

Draw the Nyquist plot and comment on stability.

b) Explain the importance of Phase-lag compensation in control system. 6 Marks

UNIT-V

9 a) Construct state model for the fallowing differential equation $3y_4+5y_3+6y_2+7y_1+4y_0 = 3u_0$. 7 Marks

b) Obtain the state variable representation for Armature controlled DC motor. 7 Marks

(OR)

10 a) Derive an expression for the solution of Homogeneous state equations. 7 Marks

b) Determine the State Controllability and Observability of the system using Kalman's test. 7 Marks

$$A = \begin{bmatrix} 0 & 2 & 0 \\ 1 & 2 & 0 \\ -1 & 0 & 1 \end{bmatrix} B = \begin{bmatrix} 0 \\ 1 \\ 1 \end{bmatrix} C = \begin{bmatrix} 1 & 0 & 1 \end{bmatrix}$$

CODE No.:14BT50202 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

COMPUTER ORGANIZATION AND ARCHITECTURE

[Electrical and Electronics Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Interpret the binary division to an example -7/-3.	7 Marks
	b)	Develop a flow chart for the Booth's multiplication algorithm.	7 Marks
		(OR)	
2	a)	Distinguish between floating point addition and subtraction using flowcharts.	7 Marks
	b)	Specify IEEE 754 floating point formats for half, single, double and Quad precision numbers.	7 Marks

UNIT-II

3	a)	Register A holds the 8-bit binary 11011001. Determine the B operand and the logic micro operation to be performed in order to change the value in A to 01101101.	7 Marks
	b)	Derive a combinational circuit that selects and generates any of 16 logic micro operations.	7 Marks
		(OR)	
4	a)	Explain the three different types of instruction formats used in basic computer.	8 Marks
	b)	Differentiate the characteristics of RISC and CISC.	6 Marks

UNIT-III

5	a)	Discuss the hardwired implementation of Control Unit.	7 Marks
	b)	Write a symbolic microprogram routine for the BSA (Branch and Save Address) instruction.	7 Marks
		(OR)	
6	a)	Define basic terms Hit, Miss and Miss penalty and explain how to compute performance of cache memory.	7 Marks
	b)	Describe the different ways of including caches on processor chip.	7 Marks

UNIT-IV

7	a)	Explain the functionality of various components of a microprocessor based system.	7 Marks
	b)	Explain the different types of addressing modes in 8085.	7 Marks
		(OR)	
8		Explain the 8085 instruction set.	14 Marks

UNIT-V

9	a)	Write an assembly language program for an 8085 processor for adding two binary numbers.	7 Marks
	b)	With the help of a neat sketch, explain memory mapped I/O interfacing.	7 Marks
		(OR)	
10		Explain 8085 interrupt process in detail.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

SYNCHRONOUS MACHINES

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain briefly load characteristics of alternators.	7 Marks
	b)	Derive the expression for coil span factor and distribution factor.	7 Marks
		(OR)	
2	a)	Distinguish between distributed and concentrated windings of synchronous machines.	7 Marks
	b)	Explain the effect of armature reaction on the performance of an alternator for a ZPF lagging power factor.	7 Marks

UNIT-II

3	a)	Describe the slip test method for measurement of Xd and Xq of synchronous machine.	7 Marks
	b)	Explain the Ampere-Turn method to find the voltage regulation of an alternator.	7 Marks
		(OR)	
4		A 3-phase, star connected alternator is rated at 1600KVA, 13,500V. The armature effective resistance and synchronous reactance are 2Ω and 20Ω respectively per phase. Calculate the percentage regulation for a load of 1200kW at power factors of: (i) 0.85 leading. (ii) unity. (iii) 0.85 lagging.	14 Marks

UNIT-III

5		Explain the effect of change in excitation and change in mechanical power input on load sharing of alternators operating in parallel.	14 Marks
		(OR)	
6		A 6,000V, 1,000kVA, 3-φ alternator is delivering full-load at 0.8 p.f. lagging. Its reactance is 20% and resistance negligible. By changing the excitation, the e.m.f. is increased by 25% at this load. Calculate the new current and the power factor. The machine is connected to infinite bus-bars.	14 Marks

UNIT-IV

7	a)	Explain the construction and principle of a synchronous motor. What are the applications of it?	7 Marks
	b)	What is meant by constant power circle for synchronous motor? How is it derived?	7 Marks
		(OR)	
8	a)	Explain the effect of varying excitation on armature current and power factor in a synchronous motor. Draw V-curves and state their significance.	7 Marks
	b)	What is synchronous condenser? Explain with help of phasor diagram its operation. What are its applications?	7 Marks

UNIT-V

9	a)	Explain constructional features and characteristics of AC series motor.	7 Marks
	b)	Explain why DC servomotors are preferred over AC servomotors for high power applications.	7 Marks
		(OR)	
10	a)	Describe the operation of a variable reluctance type stepper motor. What is micro- stepping?	7 Marks
	b)	What are the advantages and disadvantages of stepper motors?	7 Marks

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CODE No.:14BT50204 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

TRANSMISSION OF ELECTRIC POWER

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Derive an expression for the capacitance of a 3-Φ line.	7 Marks
	b)	A 3-Φ, 33KV transmission line has an impedance (0.04+j50) p.u. on a 15MVA base. At the receiving end, the voltage is 1.1 p.u. and active power is 0.4 p.u. and power factor is 0.8 lagging. Determine sending end current in terms of amperes.	7 Marks
		(OR)	
2	a)	Explain the necessity of transposition in transmission lines.	7 Marks
	b)	A single phase transmission line has two parallel conductors 3m apart each conductor being 1cm. Calculate the loop inductance per km length of the material of the conductor is i) copper ii) steel with $\mu r = 100$.	7 Marks

UNIT-II

3	a)	Define regulation.	2 Marks
	b)	A 50Hz, 3-Φ line, 100 km long delivers a load of 30MVA at 120KV, 0.8 lagging power factor. The line constants for each conductor are: resistance 15Ω, inductive reactance 40Ω, capacitive susceptance to neutral 2.5×10^{-4} S. Find the sending end voltage.	12 Marks
		(OR)	
4		A three phase 200km long high voltage line has Z=(14.1+j51.48)Ω and y=$(0+j1.194 \times 10^{-6})$ siemens. Find the characteristic impedance, propagation constant and constants A, B, C and D for the line.	14 Marks

UNIT-III

5	a)	Show that a traveling wave moves with a velocity of light on the overhead line.	7 Marks
	b)	A 3-Φ transmission line has conductors 1.5cm in diameter spaced 1m apart in equilateral formation. The resistance and leakage are negligible. Find the natural impedance of the line.	7 Marks
		(OR)	
6		What is the significance of Bewley's lattice diagram? Discuss in detail for the case of a line connected to a cable.	14 Marks

UNIT-IV

7	a)	What is the necessity of equalizing the potential across various units? Explain any one method to improve the string efficiency.	7 Marks
	b)	A 33kV overhead line, there are three units in the string of insulators. If the capacitance between each insulator pin and earth is 11% of self-capacitance of each insulator, find: (i) the distribution of voltage over 3 insulators. (ii) Sting efficiency.	7 Marks
		(OR)	

8 a) What is the purpose of guard ring which is being used in the suspension string type insulator? Deduce the relation for determining the capacitance formed by the ring. 7 Marks

b) Explain in brief : 7 Marks
(i) disadvantages of corona. (ii) different methods of reducing loss.

UNIT-V

9 a) Derive an expression for the sag of an overhead line when the towers are at unequal heights. 7 Marks

b) Derive a formula for the electric stress in a single core cable. Where is the stress maximum? Where is it minimum? 7 Marks

(OR)

10 a) Show that the most economical size of the conductor in a cable is obtained when its sheath diameter is 2**.**718 times the core diameter. 7 Marks

b) Calculate the sag for a span of 200m if the ultimate tensile strength of conductor is 5788 kg. Factor of safety is 2. Weight of conductor is 604 Kg/km. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

DYNAMICS OF MACHINERY

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 The crank and connecting rod of a reciprocating engine are 20cm and 70cm respectively. The crank is rotating in C.W direction at 120 rad/sec. Find with the help of Klein's construction. 14 Marks

i) Velocity and acceleration of the piston.
ii) Velocity and acceleration of the mid-point of C.R.
iii) Angular velocity and angular acceleration of C.R at the instant when the crank is at 30^0 to I.D.C.

(OR)

2 a) Explain the procedure to determine the velocity and acceleration of a four-bar mechanism by Klein's construction. 7 Marks

b) The lengths of crank and connecting rod of a horizontal reciprocating engine are 200mm and 800mm respectively. The crank is rotating at 480 r.p.m. Using Klein's constructions find the acceleration of the piston. 7 Marks

UNIT-II

3 A punching machine makes 25 working strokes per minute and is capable of punching 25mm diameter holes in 18mm thick steel plates having an ultimate shear strength 300Mpa.The punching operation takes place during 1/10 of a revolution of the crank shaft. Estimate the power needed for the driving motor, assuming a mechanical efficiency of 95% .Determine suitable dimensions for the rim cross-section of the fly wheel, having width equal to twice thickness .The fly wheel is to revolve at 9 times the speed of the crank shaft. The permissible coefficient of fluctuation of speed is 0.1. The fly wheel is to be made of cast iron having a density of 7250 kg/m^3. The diameter of the fly wheel must not exceed 1.4m owing to space restrictions. The hub and the spokes may be assumed to provide 5% of the rotational inertia of the wheel. 14 Marks

(OR)

4 An aero plane flying at 240 km per hour turns towards left and completes a quarter circle of 60m radius. The mass of the rotary engine and the propeller of the plane amounts to 450kg with a radius of gyration of 320mm. The engine speed is 2000 r.p.m clock wise, when viewed from the rear. Determine the gyroscopic couple on the air craft and state its effect. In what way is the effect changed when: 14 Marks

a) the aero plane turns towards right.
b) the engine rotates clock wise when viewed from front (nose end) and aero plane turns i). Left ii) .Right

UNIT-III

5 With a neat sketch, describe the principle and working of an internal expanding shoe brake. Derive expression for the braking torque 14 Marks

(OR)

6 a) Describe with a neat sketch the working of a single plate clutch. 6 Marks

b) Differentiate between: 8 Marks

i) Brakes and Dynamometer.

ii) Absorption dynamometer and Transmission dynamometer.

UNIT-IV

7 a) What is meant by effort and power of a governor? Find the expressions for the same in a porter governor. 7 Marks

b) The following data relate to a Hartnell governor M = 1.5kg; a = 100mm; b = 40mm; r_1 = 70mm; r_2 = 110mm; N_1 = 260 r.p.m; and N_2 = 275 r.p.m. The axis of rotation is 80mm form the fulcrum. Calculate the rate of the spring and the equilibrium speed when the radius of the balls is 80mm. 7 Marks

(OR)

8 a) Why is balancing necessary for rotors of high speed engines? 7 Marks

b) A circular disc mounted on a shaft carries three attached masses 4kg, 3kg and 2.5kg at radial distances 75mm, 85mm and 50mm and at the angular positions of 450, 1350 and 2400 respectively. The angular positions are measured counter-clockwise from the reference line along x-axis. Determine the amount of the counter mass at a radial distance of 75mm required for the static balance. 7 Marks

UNIT-V

9 a) What do you mean by period of vibration, cycle, frequency and resonance as applied to vibratory motion? 7 Marks

b) A shaft is simply supported at the ends and is of 20mm in diameter and 600mm in length. The shaft carries a load of 19.62 N at its centre. The weight of the shaft per metre length is 248.2 N. Find the critical speed of the shaft. Take Young's modulus as 200 GN/m^2. 7 Marks

(OR)

10 a) What do you understand by 'torsionally equivalent shaft'? 7 Marks

b) Describe in detail the method of finding the frequency of torsional vibration of a two rotor system. 7 Marks

CODE No.:14BT50302 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

INDUSTRIAL ENGINEERING AND MANAGEMENT

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Explain the importance of direction and control in management functions.	14 Marks
		(OR)	
2		Explain the Henry Fayol's principles of scientific management.	14 Marks

UNIT-II

3		What is plant location and mention various factors to be considered in selection of right plant location.	14 Marks
		(OR)	
4		Discuss about the functions and responsibilities of plant maintenance.	14 Marks

UNIT-III

5		Define productivity and explain the role of work study in reducing the work content.	14 Marks
		(OR)	
6	a)	Define work measurement and mention the techniques of work measurement.	7 Marks
	b)	Explain the stop watch procedure to conduct time study.	7 Marks

UNIT-IV

7	a)	Explain the differences between purchase and production models of inventory.	7 Marks
	b)	Derive the formula for EPQ.	7 Marks
		(OR)	
8		Explain the concept of value analysis. How is it carried out?	14 Marks

UNIT-V

9		Define quality and why quality control techniques are required in a manufacturing industry.	14 Marks
		(OR)	
10		What is acceptance sampling? Explain the concept and salient features of OC curve with a neat sketch.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

THERMAL ENGINEERING - II

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the working of Cochran boiler with a neat sketch. List out its special features.	7 Marks
	b)	What are the essential features of a good boiler?	7 Marks
		(OR)	
2	a)	What is the use of preheater in high pressure boiler?	7 Marks
	b)	Explain the working of economiser with a neat sketch.	7 Marks

UNIT-II

3	a)	Establish a condition for maximum discharge of flue gases through a chimney of given height.	7 Marks
	b)	A simple Rankine cycle works between pressures 28 bar and 0.06 bar, the initial condition of steam being dry saturated. Calculate the cycle efficiency, work ratio and specific steam consumption.	7 Marks
		(OR)	
4		Describe the different operations of rankine cycle. Derive also the expression for its efficiency with neat sketch, p-V, T-s and h-s diagrams of rankine cycle.	14 Marks

UNIT-III

5		Define nozzle efficiency. Explain the effect of friction on the performance of the nozzle with the help of h-s diagram.	14 Marks
		(OR)	
6	a)	With the help of neat sketch, explain working principle of Edward's air pump.	7 Marks
	b)	Dry saturated steam at 10 bar is expanded isentropically in a nozzle to 0.1 bar. Find the dryness fraction of steam at the exit. Also find the velocity of steam leaving the nozzle when: i) The initial velocity is negligible. ii) The initial velocity of steam is 135m/s.	7 Marks

UNIT-IV

7		The following data refer to a particular stage of a Parson's reaction turbine: Speed of the turbine = 1,500 R.P.M. mean diameter of the rotor = 1m; stage efficiency: 80%; Blade outlet angle = 20º, Speed ratio = 0.7. Determine the available isentropic enthalpy drop in the stage.	14 Marks
		(OR)	
8		A stage in an impulse turbine consists of converging nozzles and one ring of moving blades. The nozzle angles are 22º and the moving blades have both tip angles of 35º. If the velocity of steam at nozzle exit is 450m/s, find the blade speed so that the steam shall pass on to the blades without shock and find the stage efficiency, neglecting frictional losses, if the blades run at the end thrust on shaft if power developed is 36.8 KW.	14 Marks

UNIT-V

9 a) Describe with a neat sketch, the working of a constant pressure combustion gas turbine cycle. 7 Marks

b) A gas turbine has a pressure ratio of 6**:**1 and maximum cycle temperature of 610^0C. The isentropic efficiencies of compressor and turbine are 0**.**8 and 0**.**82 respectively. Calculate the power output in kW of an electric generator geared to the turbine when the air enters the compressor at 15^0C and the rate of 16kg/s. Take Cp = 1**.**005 kJ/kg K and r = 1**.**4. 7 Marks

(OR)

10 a) Explain briefly with a sketch, the working principle of a rocket. 7 Marks

b) With the aid of the schematic diagram and thermodynamic cycle, explain the working of a turbo jet engine. 7 Marks

CODE No.:14BT50304 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

MACHINE TOOLS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the concept of built up edge.	7 Marks
	b)	What are the different areas and sources of heat generation during metal cutting? Explain.	7 Marks
		(OR)	
2	a)	With a neat sketch explain the nomenclature of a single point cutting tool and its significance.	10 Marks
	b)	Mention the various types of chips and their significance.	4 Marks

UNIT-II

3	a)	What is tool life? What are the factors affecting tool life?	6 Marks
	b)	Explain the mechanism of wear in metal cutting.	8 Marks
		(OR)	
4	a)	With a neat sketch, explain the various parts of a lathe.	8 Marks
	b)	Explain the various taper turning methods using a lathe.	6 Marks

UNIT-III

5		With a neat sketch, mention the various parts and the working principle of a planning machine.	14 Marks
		(OR)	
6		Classify the drilling machines and mention their applications. With a neat sketch, explain the various parts and their uses of a radial drilling machine.	14 Marks

UNIT-IV

7	a)	With a neat sketch, explain a cylindrical grinding machine.	7 Marks
	b)	Explain the working principle of tool and cutter grinding machine.	7 Marks
		(OR)	
8	a)	Explain the specification and selection of a grinding wheel.	8 Marks
	b)	Compare grinding, lapping and honing.	6 Marks

UNIT-V

9	a)	Explain the different types of indexing used in a milling machine.	8 Marks
	b)	Explain cam milling process.	6 Marks
		(OR)	
10	a)	Distinguish a jig and a fixture.	6 Marks
	b)	Discuss the principles of location and clamping to be followed in jigs and fixtures.	8 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

DESIGN OF MACHINE ELEMENTS-I

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Explain the importance of manufacturing considerations in the design process. 7 Marks

b) Define "mechanical properties of an engineering material". State any six mechanical properties and applications of it. 7 Marks

(OR)

2 a) Explain the basic modes of failure of mechanical components with examples. 7 Marks

b) Describe the process of selection of engineering materials. 7 Marks

UNIT-II

3 a) Define stress concentration and also give the sources of stress concentration. 7 Marks

b) A rotating bar made of steel 40C8 is subjected to a completely reversed bending stress. The corrected endurance limit of the bar is 315N/mm^2. Calculate the fatigue strength of the bar for a life of 90,000 cycles. 7 Marks

(OR)

4 A solid circular shaft made of steel Fe620 (S_{ut}=620N/mm^2 and S_{yt}=380N/mm^2) is subjected to an alternating bending moment that varies from -200 N-m to +400 N-m. The shaft is ground and expected reliability is 90%.The theoretical stress concentration factor is 1.6 and the notch sensitivity factor is 0.9. Determine the shaft diameter for infinite life using (i) Soderberg method (ii) Goodman method. Assume size factor=0.85. 14 Marks

UNIT-III

5 A bracket is fixed to the steel column by means of four identical bolts (Fig.1), two at A and two at B. The maximum load that comes on the bracket is 5kN acting vertically at a distance of 250mm from the face of the column. The bolts are made of plain carbon steel 30C8 and the factor of safety is 5. Determine the major diameter of the bolts on the basis of maximum principal stress. 14 Marks

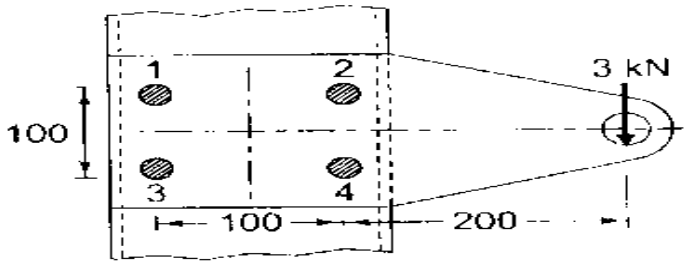

Fig.1

(OR)

6 a) Discuss various ways in which a riveted joint may fail. 6 Marks

b) Two plates of 10mm thick are joined by means of a single riveted, double strap butt joint. The rivet diameter is 20 mm and pitch of the rivets is 60mm. The permissible stresses are: σ_t=80 MPa, σ_c = 120 MPa, τ = 60 MPa. Calculate the efficiency of the joint. 8 Marks

UNIT-IV

7	a)	How are the keys classified? Draw neat sketches of different types of keys and state their applications.	7 Marks
	b)	A solid circular shaft is subjected to a bending moment of 3000N-m and a torque of 10 000N-m. The shaft is made of 45C8 steel having ultimate tensile stress of 700MPa and a ultimate shear stress of 500MPa. Assuming a factor of safety as 6, determine the diameter of the shaft.	7 Marks

(OR)

8	a)	How do you classify couplings? Explain the function of each in detail.	7 Marks
	b)	Design the rectangular key for a shaft of 50mm diameter. The shearing and crushing stresses for the key material are 42MPa and 70MPa.	7 Marks

UNIT-V

9	a)	What are the applications of a cotter joints?	4 Marks
	b)	Describe the design procedure of a Knuckle joint.	10 Marks

(OR)

10		Design a knuckle joint to transmit 150kN. The design stresses may be taken as 75MPa in tension, 60MPa in shear and 150MPa in compression	14 Marks

CODE No.:14BT50306 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

AUTOMOBILE ENGINEERING

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Classify the automobiles. Explain with suitable examples.	7 Marks
	b)	Explain the working of Solex Carburettor with neat sketch.	7 Marks
		(OR)	
2	a)	Describe the construction and working of S U Carburettor with a neat sketch.	7 Marks
	b)	Outline the Diesel fuel pump and explain the working principle in detail.	7 Marks

UNIT-II

3	a)	What are the requirements of antifreeze mixture used as coolant in automobiles?	7 Marks
	b)	Explain with a schematic diagram, working of magneto ignition system.	7 Marks
		(OR)	
4	a)	Explain the working of evaporative cooling system with its relative advantages.	7 Marks
	b)	Why it is desirable to advance the ignition timing as the engine speed increases?	7 Marks

UNIT-III

5	a)	Give a brief note on Bharat stage IV norms and Euro stage V norms.	7 Marks
	b)	What are the merits and limitations of use of LPG as fuel in automobiles?	7 Marks
		(OR)	
6	a)	List the salient characteristics of LPG and CNG when used as alternative fuel in automobile engine.	7 Marks
	b)	Describe the characteristics of alternative fuels for automobile engines.	7 Marks

UNIT-IV

7	a)	Explain with a simple schematic diagram, working of a centrifugal clutch.	7 Marks
	b)	What are the different steering gears available? Explain them briefly.	7 Marks
		(OR)	
8	a)	Why differential essential in an automobile? Explain its working with relevant sketches	7 Marks
	b)	What is wheel alignment and why it is essential in an automobile?	7 Marks

UNIT-V

9	a)	Explain with neat sketch elements of a suspension system in detail.	7 Marks
	b)	Differentiate rigid axel suspension and independent suspension.	7 Marks
		(OR)	
10	a)	Explain the working of a mechanically operated inter expanding break with a neat sketch.	7 Marks
	b)	Draw the layout of pneumatic break system and explain the working in detail.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

ANTENNAS AND PROPAGATION

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Derive radar range equation and explain its importance.	7 Marks
	b)	Define the terms Radiation intensity, Beam width, Bandwidth and Beam efficiency.	7 Marks
		(OR)	
2	a)	Obtain the relations between the potentials and their sources.	7 Marks
	b)	What are retarded potentials? Explain its significance.	7 Marks

UNIT-II

3	a)	Explain binomial array.	8 Marks
	b)	Distinguish between binomial and uniform linear arrays.	6 Marks
		(OR)	
4	a)	Find the radiation pattern of four isotropic elements fed in phase, spaced $\lambda/2$ apart by using pattern multiplication.	8 Marks
	b)	Compare broad-side and end-fire arrays.	6 Marks

UNIT-III

5	a)	What is Yagi-Uda antenna? Explain its construction and properties with special reference to the directivity, bandwidth and impedance.	8 Marks
	b)	Explain folded diploes and their characteristics.	6 Marks
		(OR)	
6	a)	Discuss the design considerations for monofilar helical antenna in axial mode.	7 Marks
	b)	With neat diagram, explain the geometry of parabolic reflector.	7 Marks

UNIT-IV

7		Explain the techniques used for measuring the directivity in detail.	14 Marks
		(OR)	
8		Explain the concept of zoning and specify the tolerances of zoned and un-zoned nonmetallic dielectric lens antennas.	14 Marks

UNIT-V

9	a)	Explain M-curves and their characteristics.	6 Marks
	b)	Explain space wave propagation mechanism in detail.	8 Marks
		(OR)	
10	a)	Write short notes on tropospheric propagation.	6 Marks
	b)	What is meant by the term fading? Explain about different types of fading.	8 Marks

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CODE No.:14BT50402 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

DIGITAL COMMUNICATIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the model of digital communication systems with neat diagrams.	8 Marks
	b)	Derive the relation for signaling rate and transmission bandwidth in a PCM system.	6 Marks
		(OR)	
2	a)	Explain the need for non-uniform quantization in digital communications.	7 Marks
	b)	Explain with a neat block diagram of differential PCM system.	7 Marks

UNIT-II

3	a)	Derive an expression for quantization error and SNR of PCM system.	10 Marks
	b)	Explain the effect of thermal noise in PCM.	4 Marks
		(OR)	
4	a)	Obtain an expression for S/N at the output of a DM system.	7 Marks
	b)	Explain the effect of thermal noise in DM.	7 Marks

UNIT-III

5		Draw the block diagram of Base Band binary data transmission system and explain the role of each block.	14 Marks
		(OR)	
6	a)	Explain the generation, detection, signal space diagram of ASK system.	7 Marks
	b)	Define QAM and draw its constellation diagram for M = 8.	7 Marks

UNIT-IV

7	a)	Show that H(X,Y) = H(X) + H(Y/X) = H(Y) + H(X/Y).	8 Marks
	b)	Define the channel capacity in terms of average signal power and noise power.	6 Marks
		(OR)	
8	a)	Explain the algorithm of Shannon-Fano Encoding technique.	6 Marks
	b)	Apply Huffman coding procedure to determine a binary code for the source output.	8 Marks
		[x] = $[x_1, x_2, x_3, x_4, x_5, x_6, x_7, x_8]$	
		[P] = [0.1, 0.25, 0.15, 0.05, 0.15, 0.1, 0.05, 0.15]	

UNIT-V

9	a)	Explain how encoding is done by convolutional codes with an example.	7 Marks
	b)	Compare Coded and Uncoded systems in detail.	7 Marks
		(OR)	
10	a)	Explain Linear Block Codes and Hamming Codes.	7 Marks
	b)	Explain the handling of burst errors in communications.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

DIGITAL IC APPLICATIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain clearly about the CMOS logic families with simple logic examples.	7 Marks
	b)	Draw the transistor level representation for XNOR gate using CMOS logic style.	7 Marks
		(OR)	
2		Compare the different logic families used in digital logic circuits implementations.	14 Marks

UNIT-II

3	a)	Explain clearly about the ASIC design flow.	7 Marks
	b)	Explain the operators used in Verilog HDL.	7 Marks
		(OR)	
4	a)	Write a Verilog code for 4bit comparator using suitable modeling style.	7 Marks
	b)	Explain clearly about net data types used in Verilog HDL.	7 Marks

UNIT-III

5		A simple floating-point encoder converts 16-bit fixed-point data using four high order bits beginning with MSB. Design the logic circuit and write VHDL data-flow program.	14 Marks
		(OR)	
6	a)	Implement the full adder circuit using basic gates and explain its operation.	7 Marks
	b)	Design a 4 to 16 decoder using two 74 x 138 IC's.	7 Marks

UNIT-IV

7	a)	Design and implement a 74 x 194 shift register and write Verilog code for the same.	10 Marks
	b)	Discuss about flip flops and latches.	4 Marks
		(OR)	
8	a)	Design a four bit bidirectional shift register.	7 Marks
	b)	Write a Verilog code for a simple BCD counter.	7 Marks

UNIT-V

9		Write short notes on the following terms in detail. (i) RAM. (ii) SRAM. (iii) DRAM. (iv) SDRAM.	14 Marks
		(OR)	
10	a)	Discuss how PROM, EPROM and EEPROM technologies differ from each other.	6 Marks
	b)	Using 64 x 8 ROM chips with an enable input, construct a 512 x 8 ROM with eight chips and a decoder.	8 Marks

CODE No.:14BT50404 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

LINEAR IC APPLICATIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	List and explain the functionality of all the basic building blocks of an op-amp.	7 Marks
	b)	Explain about AC characteristics of an op- amp.	7 Marks
		(OR)	
2	a)	Explain in detail about the differential amplifier.	7 Marks
	b)	Define CMRR. For op-amp, CMRR=10^5 and differential gain A_{DM} = 10^5. Calculate the common mode gain A_{CM} of the op-amp.	7 Marks

UNIT-II

3	a)	Explain about V to I and I to V converters using op-amp.	7 Marks
	b)	Explain the applications of op-amp.	7 Marks
		(OR)	
4		Explain the operation of Instrumentation amplifier using op-amp and mention its applications.	14 Marks

UNIT-III

5		Discuss the functional block diagram of a 723 voltage regulator and explain one of its applications.	14 Marks
		(OR)	
6		Explain the advantages of active filters. Explain different configurations of active filters. Discuss their merits and demerits.	14 Marks

UNIT-IV

7	a)	List and explain the basic building blocks of a PLL.	7 Marks
	b)	Discuss the operation of a FSK generator using 555 timer.	7 Marks
		(OR)	
8	a)	Draw and explain the functional diagram of a 555 timer?	7 Marks
	b)	Derive the expression of time delay of an astable multivibrator.	7 Marks

UNIT-V

9	a)	Explain the operation of successive approximation type ADC.	7 Marks
	b)	Discuss about ADC specification.	7 Marks
		(OR)	
10	a)	Explain the working of inverted R-2R DAC.	7 Marks
	b)	Discuss about the features of IC1408 DAC.	7 Marks

CODE No.:14BT50405 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

PULSE AND DIGITAL CIRCUITS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the operation of parallel RLC circuit and its response to a step input.	7 Marks
	b)	Explain the operation of high-pass RC circuit with different time constants compared to input pulse width. Draw the input and output waveforms.	7 Marks
		(OR)	
2	a)	Explain ringing circuit and attenuator.	7 Marks
	b)	Explain the application of an attenuator as CRO probe.	7 Marks

UNIT-II

3	a)	Define clipper. Explain the clipping using zero diodes.	7 Marks
	b)	Draw a transistor clipper and explain its operation.	7 Marks
		(OR)	
4	a)	Explain positive and negative clippers with neat circuit diagrams and waveforms.	7 Marks
	b)	Explain the effects of diode characteristics on clamping voltage.	7 Marks

UNIT-III

5	a)	Give the design procedure for emitter coupled astable multivibrator.	7 Marks
	b)	Design an monostable multivibrator to produce an output with pulse width 120 msec for V_{CC} = 10V, h_{FE} = 50, $IC_{(sat)}$ = 100 μA.	7 Marks
		(OR)	
6		Draw the free running Collector-coupled Astable Multivibrator circuit and explain its operation with necessary waveforms. Why is it called voltage-to-frequency converter?	14 Marks

UNIT-IV

7	a)	Give general features of a time-base signal and different methods to generate time base signals.	7 Marks
	b)	Write about astable relaxation circuits.	7 Marks
		(OR)	
8	a)	Explain the working of a Bootstrap time base generator.	7 Marks
	b)	Explain the basic principle of a transistor current sweep generator. Draw the circuit and explain its operation with necessary waveforms.	7 Marks

UNIT-V

9	a)	Explain bidirectional sampling gates.	6 Marks
	b)	Explain four diode and six diode sampling gates and their applications.	8 Marks
		(OR)	
10	a)	Explain emitter coupled logic circuit.	5 Marks
	b)	Compare RTL, DTL and TTL logic families.	9 Marks

CODE No.:14BT50431 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

MICROPROCESSORS AND INTERFACING

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Sketch and explain the timing diagrams of READ and WRITE machine cycles.	10 Marks
	b)	Describe briefly what a recursive and reentrant procedure is.	4 Marks
		(OR)	
2	a)	Write a program in assembly language to find the factorial of number.	10 Marks
	b)	Explain the functions of NMI, ALE, BHE and LOCK pins of 8086.	4 Marks

UNIT-II

3	a)	Describe the Interrupt handling mechanism of 8086.	8 Marks
	b)	Bring out the differences between static and dynamic RAM.	6 Marks
		(OR)	
4	a)	Explain the interrupt response sequence of 8086 microprocessor.	7 Marks
	b)	Elucidate 8086 interrupt structure.	7 Marks

UNIT-III

5	a)	Explain mode 0 and mode1 operation of 8255.	7 Marks
	b)	Show four phase stepper motor interfacing circuit and discuss the function of each component in it.	7 Marks
		(OR)	
6	a)	Illustrate the different modes of operations of 8255.	7 Marks
	b)	Write an ALP to rotate a stepper motor with 50 teeth an angle of 90° clockwise and then 180° anticlockwise direction.	7 Marks

UNIT-IV

7	a)	Explain the command and status words of 8251A.	7 Marks
	b)	Draw and explain the functional block diagram of 8251A.	7 Marks
		(OR)	
8	a)	Draw the block diagram of 8251 and explain each block in detail.	7 Marks
	b)	Give the command instruction and status register format of 8251.	7 Marks

UNIT-V

9	a)	Justify the statement “8051 is built around I/O Ports”.	7 Marks
	b)	Explain the basic differences between a microprocessor and a microcontroller.	7 Marks
		(OR)	
10	a)	Discuss the function of each port of 8051 in detail.	7 Marks
	b)	Explain the internal RAM organization of 8051. Discuss how switching between register banks is possible.	7 Marks

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CODE No.:14BT50501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

THEORY OF COMPUTATION

[Computer Science and Engineering, Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define Finite Automata (FA). Give few application of the FA.	4 Marks
	b)	Give an NFA recognizing the language (01 U 001 U 010)*.	10 Marks
		(OR)	
2	a)	Write a note on NFA and compare with DFA	7 Marks
	b)	Discuss on the relation between DFA and minimal DFA.	7 Marks

UNIT-II

3	a)	Discuss on Regular Expressions.	7 Marks
	b)	Discuss in detail about the closure properties of regular languages.	7 Marks
		(OR)	
4		Construct a non-deterministic finite automation accepting the same set of strings over {a,b} ending in aba. Use it to construct a DFA accepting the same set of strings.	14 Marks

UNIT-III

5		Construct a PDA for the language **L = {x€{a,b} * | n_a (x) > n_b (x)}**.	14 Marks
		(OR)	
6		Prove the equivalence of PDA and CFL.	14 Marks

UNIT-IV

7	a)	Write a brief note on Chomsky Hierarchy.	4 Marks
	b)	Design a TM for the language **C= {** $a^i b^j c^k$ **| *i* x *j* = *k* and *i*, *j*, *k* ≥ 1}**	10 Marks
		(OR)	
8		What are the features of Turing Machine (TM)? Design a TM that computes x+y where x and y are positive integers.	14 Marks

UNIT-V

9		Illustrate the Turing Machine model formally.	14 Marks
		(OR)	
10		List the properties of recursive and recursively enumerable languages.	14 Marks

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CODE No.:14BT50502 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

UNIX INTERNALS

[Computer Science and Engineering, Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain in detail about the components of the System Kernel with neat block diagram.	7 Marks
	b)	Discuss about the buffer header and buffer pool.	7 Marks
		(OR)	
2	a)	Explain in detail about the process utilities.	7 Marks
	b)	Discuss about the Networking commands.	7 Marks

UNIT-II

3	a)	What do you mean by Shell and explain in detail about the Shell responsibilities?	7 Marks
	b)	Discuss about pipes.	7 Marks
		(OR)	
4	a)	Explain about the control structures in shell programming.	7 Marks
	b)	Discuss about the backup utilities.	7 Marks

UNIT-III

5	a)	How the kernel assigns inode numbers to a file? Explain.	7 Marks
	b)	Why we will be using link and unlink system calls? Discuss.	7 Marks
		(OR)	
6		Give the syntax and write example program that contain ‘fopen’, ‘fread’, ‘fwrite’, ‘fclose’, ‘fflush’, ‘fseek’, ‘fgets’, ‘fputc’ , ‘printf’, ‘‘fprintf’ , ‘fscanf’, ‘sscanf’.	14 Marks

UNIT-IV

7	a)	Discuss about the Job control functions.	7 Marks
	b)	Explain in detail about competing locks.	7 Marks
		(OR)	
8	a)	Explain in detail about the process structure with block diagram.	7 Marks
	b)	Explain about the functions which are used for allocating and deallocating memory with example program.	7 Marks

UNIT-V

9	a)	Define a pipe. Explain how the data can be passed between two processes by using popen and pclose system calls.	7 Marks
	b)	Write and explain the attributes of a socket.	7 Marks
		(OR)	
10	a)	Explain how the pipes are used as standard input and output.	7 Marks
	b)	Write a socket program for working of local client.	7 Marks

CODE No.:14BT51003 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

LINEAR AND DIGITAL IC APPLICATIONS

[Electrical and Electronics Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is the need of frequency compensation for an op-amp? Explain Dominant-Pole frequency compensation technique.	7 Marks
	b)	Explain the function of various blocks in block diagram of an op-amp.	7 Marks
		(OR)	
2	a)	List the characteristics of an ideal op-amp.	4 Marks
	b)	Explain in detail about the AC characteristics of an op-amp.	10 Marks

UNIT-II

3	a)	Draw and explain the operation of op-amp based non-inverting comparator.	6 Marks
	b)	Design a second order butterworth high pass filter having lower cut-off frequency 1KHz.	8 Marks
		(OR)	
4	a)	Draw and explain the operation of Antilog amplifier.	6 Marks
	b)	Design a first-order high pass filter at a cut-off frequency of 400Hz and a pass-band gain of 1.	8 Marks

UNIT-III

5	a)	List out the applications of PLL and explain any two applications.	7 Marks
	b)	Design a 555 timer astable multivibrator operating at 20KHz with 40% duty cycle.	7 Marks
		(OR)	
6	a)	Explain the operation of dual slope A/D converter.	7 Marks
	b)	Draw and explain VCO working principle and derive a equation for its free running.	7 Marks

UNIT-IV

7	a)	What do you mean by 5V tolerant inputs?	3 Marks
	b)	Define DC noise margin with reference to TTL gate.	3 Marks
	c)	Draw and explain the circuit diagram of 2-input ECL NOR/OR gate.	8 Marks
		(OR)	
8	a)	Explain the following terms with reference to CMOS logic: i) Logic levels. ii) Power supply rails.	6 Marks
	b)	Briefly explain about CMOS/TTL interfacing.	8 Marks

UNIT-V

9	a)	Explain the data flow modeling in Verilog.	8 Marks
	b)	Write a Verilog program for 4 input priority encoder.	6 Marks
		(OR)	
10	a)	Discuss in brief about Verilog operators.	7 Marks
	b)	Write a Verilog program for full-adder in behavioral model.	7 Marks

CODE No.:14BT51201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

COMPUTER NETWORKS

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain about twisted pair cables and coaxial cables with neat diagram.	6 Marks
	b)	Explain in detail TCP/IP reference model.	8 Marks
		(OR)	
2	a)	Write about magnetic media and fiber optic cables with neat diagram.	7 Marks
	b)	Write short notes on different guided media transmission media.	7 Marks

UNIT-II

3	a)	Explain about limited contention protocol.	6 Marks
	b)	Explain CSMA/CA protocol and write its advantages.	8 Marks
		(OR)	
4	a)	What is framing? Describe various framing techniques in data link layer.	7 Marks
	b)	Explain the procedure used in CRC for detection for detection of errors.	7 Marks

UNIT-III

5	a)	Explain about congestion prevention policies.	7 Marks
	b)	Explain about IPv6 Header format.	7 Marks
		(OR)	
6	a)	Compare and contrast virtual-circuit and datagram subnet.	7 Marks
	b)	Specify the techniques used to achieve the good QOS.	7 Marks

UNIT-IV

7		What is congestion? How can we control it? Explain it with respect to transport layer.	14 Marks
		(OR)	
8	a)	How to release the connection in Transport protocol? Explain	7 Marks
	b)	Explain about the RTP Header.	7 Marks

UNIT-V

9	a)	What are the major components in E-mail system?	7 Marks
	b)	Explain about dynamic web document.	7 Marks
		(OR)	
10		What is Cryptography? Explain about various substitution techniques in Cryptography.	14 Marks

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CODE No.:14BT51202 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

SOFTWARE ENGINEERING

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Briefly describe about various software myths.	7 Marks
	b)	Explain key activities of the Extreme programming process model (XP) with diagram.	7 Marks
		(OR)	
2	a)	What is the purpose of process assessment? Explain various approaches for process assessment with the help of a diagram.	7 Marks
	b)	List out the major work products produced for each unified process phase.	7 Marks

UNIT-II

3		Explain the structure of software requirements document.	14 Marks
		(OR)	
4	a)	Describe inheritance model for a library management system with a diagram.	7 Marks
	b)	List out and explain briefly about metrics specifying non functional requirements for software.	7 Marks

UNIT-III

5	a)	How the Architectural Design can be represented?	7 Marks
	b)	What are the golden rules for user interface design?	7 Marks
		(OR)	
6	a)	Explain the software design quality guidelines and its attributes.	7 Marks
	b)	Briefly write about User interface analysis and design.	7 Marks

UNIT-IV

7		Discuss about various aspects of strategic approach to software testing.	14 Marks
		(OR)	
8	a)	Discuss about validation testing.	7 Marks
	b)	Explain debugging process with neat diagram.	7 Marks

UNIT-V

9	a)	What are software risks? How will you identify them?	7 Marks
	b)	What is software quality? What are SQA activities?	7 Marks
		(OR)	
10		Identify top 10 risk items and risk management techniques for managing them.	14 Marks

CODE No.:14BT51501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

OPERATING SYSTEMS

[Computer Science and Engineering, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define the essential properties of a distributed system.	7 Marks
	b)	What are the limitations of handheld systems? Explain with examples.	7 Marks
		(OR)	
2	a)	Explain reasons for Process Creation, Process Termination and Process Suspension.	7 Marks
	b)	Explain context switching and mode switching.	7 Marks

UNIT-II

3	a)	What is a semaphore? What is the difference between semaphore and Mutex?	7 Marks
	b)	Explain about dining philosopher's problem.	7 Marks
		(OR)	
4	a)	What are the methods used to recover from deadlock?	7 Marks
	b)	Explain Bankers algorithm for deadlock avoidance.	7 Marks

UNIT-III

5	a)	Explain about Demand Paging with example.	7 Marks
	b)	Explain about Copy-on-Write with example.	7 Marks
		(OR)	
6	a)	What is the difference between internal fragmentation and external fragmentation? What is the solution to these problems?	7 Marks
	b)	Explain optimal page replacement algorithm with an example.	7 Marks

UNIT-IV

7	a)	Explain the concept of a file, the types of files and the operations that can be performed on a file.	7 Marks
	b)	Explain about Directory Implementation with example.	7 Marks
		(OR)	
8		Explain about Tertiary storage structure.	14 Marks

UNIT-V

9	a)	Explain the concept of buffering.	7 Marks
	b)	Explain unix I/O kernel structure.	7 Marks
		(OR)	
10	a)	Explain the Goals of Protection.	7 Marks
	b)	Explain about the Access Matrix with one example.	7 Marks

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CODE No.:14BT51502 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

SYSTEMS SOFTWARE

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write an addressing modes instruction sets. Explain the instruction formats and addressing modes of SIC/XE.	7 Marks
	b)	Explain the I/O and programming with examples.	7 Marks
		(OR)	
2	a)	What are the various Registers of SIC? Explain.	7 Marks
	b)	Write a SIC/XE program to copy array A of 100 words to array B of same size.	7 Marks

UNIT-II

3	a)	What is relocation? Illustrate how a modification record is used in relocation of program.	7 Marks
	b)	Explain briefly the SIC assembler directives with examples.	7 Marks
		(OR)	
4		Explain the following machine independent features of SIC assembler: i) Symbol defining. ii) Control sections.	14 Marks

UNIT-III

5		Explain the processing of an object program using: i) Linking loader. ii) Linkage editor.	14 Marks
		(OR)	
6	a)	Give the features of machine-independent loader.	7 Marks
	b)	Write an assembly language program for implementing an absolute loader.	7 Marks

UNIT-IV

7		Discuss in detail on macro instruction arguments.	14 Marks
		(OR)	
8	a)	Using an example explain about macro instructions defining macros.	8 Marks
	b)	What are the basic tasks that any macro instruction processor must perform?	6 Marks

UNIT-V

9		Write short notes on: i) Interactive debugging. ii) User interface.	14 Marks
		(OR)	
10		Explain its functionality of editor structure with neat diagram.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

BUSINESS COMMUNICATION AND PRESENTATION SKILLS

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		What makes for effective managerial communication? Additionally, what traits make a manager ineffective?	14 Marks
		(OR)	
2		Why are some organizations very effective in being able to manage their internal affairs and communicate well with their stakeholders?	14 Marks

UNIT-II

3		What factors do you bear in mind while communicating with people of a different cultural background?	14 Marks
		(OR)	
4	a)	Show how proxemics play a prominent role in communication.	7 Marks
	b)	Do you think you can manage any communication situation just with non-verbal cues? Give situational examples.	7 Marks

UNIT-III

5		What are the major parts of a business report? Write the body of a business report that looks at the feasibility of installing solar power plants in your college campus.	14 Marks
		(OR)	
6		Write a business report that looks at the possibility of exporting computers and peripherals to Philippines.	14 Marks

UNIT-IV

7		How is Group Discussion different from debate? What are the dos and don'ts of GD?	14 Marks
		(OR)	
8		Your friend maintains that Group Discussion may not be a very reliable way of determining how industry ready a candidate is. In other words Group Discussion cannot establish a candidate's readiness for the job. How will you contradict him/her?	14 Marks

UNIT-V

9	a)	What is a Resume? What is its main function?	7 Marks
	b)	Discuss the features of a good Resume.	7 Marks
		(OR)	
10		What are the various types of interviews? How do you screen the job applicants?	14 Marks

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CODE No.:14BT5HS01 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

MANAGERIAL ECONOMICS AND PRINCIPLES OF ACCOUNTANCY

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Define Demand. What are the factors that influence the demand? 14 Marks

(OR)

2 Define elasticity of demand. How are the price, income, cross elasticities are measured? 14 Marks

UNIT-II

3 Define Break-Even analysis and state its assumptions, merits and demerits. 14 Marks

(OR)

4 M/s Telex & Co., specialize in the manufacturing of small capacity motors. The cost structure of each motor is as under: 14 Marks

Particulars	Rs.
Material cost	100
Labor	80
Variable overhead	75% of labor cost

Fixed overhead of the Company is Rs.4,80,000 per annum.
If sale price of the each motor is Rs.460, determine the number of motors that have to be manufactured and sold in a year in order to break even.

UNIT-III

5 Define monopolistic competition and explain its features. 14 Marks

(OR)

6 Define pricing and state the objectives and policies of pricing. 14 Marks

UNIT-IV

7 Explain about Double Entry Book Keeping system. 14 Marks

(OR)

8 The following are the balances extracted from the books of Kavitha on 31.12.2015. Prepare Trial Balance. 14 Marks

Capital Rs. 15,000 ; drawings Rs.2,500 ; Furniture Rs.1,300 ; Bank OD Rs.2,100 ; Creditors Rs.5,500 ; premises Rs. 10,000 ; stock Rs.11,000 ; Debtors Rs.9,000 ; Rent (cr) 500 ; purchases Rs.55,000 ; sales Rs.75,000 ; Returns inwads Rs.1,000 ; Discount (Dr) Rs.800 ; Discount (cr) 1,000 ; Wages Rs.1,000 ; Salaries Rs.4,500 ; General expenses Rs.2,000 ; Commission Rs.1,100 ; Carriage Rs. 900 ; Reserve for bad and doubtful debts Rs.1,000 ; Outstanding salaries Rs.500 ; Rent receivable Rs.500.

UNIT-V

9 Explain about Manual Accounting and Computerized Accounting. 14 Marks

(OR)

10 From the following account balances, prepare Trading and Profit & Loss Account for the year ending 31.12.2015 and a Balance Sheet as on that date. 14 Marks

Debit Balance	Amount (Rs.)	Credit Balance	Amount (Rs.)
Opening stock	5,200	Capital	16,000
Purchases	15,500	Creditors	2,000
Sales Returns	300	Sales	20,000
Debtors	4,000	Commission	3,140
Buildings	5,000	Rent	2,000
Machinery	4,000		
Furniture	1,600		
Bills receivables	2,000		
Salaries	1,600		
Tax	200		
Insurance	300		
Carriage on purchases	900		
Trade expenses	300		
Travelling expenses	440		
Wages	1000		
Cash	800		

Adjustments:

(i) Closing stock (31.12.2015) Rs.12,000

(ii) Rent due but not received Rs.500

(iii) Commission to the extent of Rs.140 received in advance.

(iv) Charge depreciation @ 10% p.a. on machinery.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

MANAGEMENT SCIENCE

[Civil Engineering, Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) What are observations made by Henry Fayol on the basic functions of management? 7 Marks

b) Explain the features of cellular organization. What are its merits and demerits? 7 Marks

(OR)

2 a) Distinguish between Formal and Informal organizations. 7 Marks

b) Explain the contributions of F.W.Taylor in the area of scientific management and its utility for modern managers. 7 Marks

UNIT-II

3 The following table shows the number of defects from 100 meters bolt of cloth: 14 Marks

Number of bolt of cloth	No. of defects
1	3
2	1
3	5
4	4
5	7
6	1
7	0
8	10
9	5
10	4

i) Compute the value of $\bar{c}$ and its control limits

ii) Draw C- chart

iii) Compute value of $\bar{c}$ for limit future production.

(OR)

4 a) Define Plant layout. Explain the objective of the good plant layout. 7 Marks

b) Subgroups of 160 pistons are taken each day for 25 consecutive days for inspection. The number of defectives in these 25 subgroups are as follows: 4,3,6,8,5,7,5,9,12,8,4,5,9,10,10,6,7,5,9,8,6,4,6,5,14, construct the **np** chart and obtain the interference. 7 Marks

UNIT-III

5 Explain the importance and role of a HR manager in an organization. 14 Marks

(OR)

6 Explain the McGregor's X and Y theories. Discuss the appropriateness of both the theories taking suitable situations. 14 Marks

UNIT-IV

7 Draw the PERT network for the following activities and determine the probability of completing the project in 48 days. 14 Marks

Activity	Duration		
	Optimistic	Most likely	Pessimistic
1-2	5	8	11
1-3	1	3	5
2-4	4	6	7
3-4	3	7	9
4-5	10	20	30
4-6	14	18	23
4-7	3	6	10
5-7	5	9	12
6-8	1	4	6
7-8	2	5	9

(OR)

8 a) What is meant by crashing of network? Give step by step procedure for crashing. Illustrate with an example of your choice. 7 Marks

b) A project consists of the following logical event relationships: 7 Marks

Predecessor	1	1	1	2	2	3	4	4	5	6	7
Successor	2	3	5	4	5	6	7	8	7	7	8
Duration	3	5	7	10	8	11	0*	4	5	14	12

*Dummy activity

Draw the network and find the critical path and also find the duration for project completion.

UNIT-V

9 Write a short notes on any **TWO of** the following 14 Marks

i) Total Quality Management(TQM)

ii) Just-In-Time(JIT)

iii) Intellectual property Rights(IPR)

iv) Business process outsourcing(BPO)

(OR)

10 a) How can supply chain management (SCM) be applied to an organization? 7 Marks

b) What is the role of information technology in managerial decision making? 7 Marks

CODE No.:14BT40503 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

DESIGN AND ANALYSIS OF ALGORITHMS

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write the pseudo code for find factorial of a number using recursion and analyze the space complexity of it.	7 Marks
	b)	Define and write the algorithms for union and find operations.	7 Marks
		(OR)	
2		Suppose we start with **n** sets, each containing a distinct elements; i) Show that if u unions are performed, then no set contains more than n+ 1 element. ii) Prove that at most n-1 union can be performed before the number of sets becomes 1.	14 Marks

UNIT-II

3		Explain about BFS Traversal in detail with an example.	14 Marks
		(OR)	
4		Explain DFS Traversal in detail with an example.	14 Marks

UNIT-III

5	a)	Define Merging and Purging Rules in 0/1 Knapsack problem.	7 Marks
	b)	Write an algorithm for all pairs shortest path and explain with an example.	7 Marks
		(OR)	
6		Prove that Greedy Knapsack generates optimal solution to the given instance of Knapsack problem when profit weight ratio is arranged in non-increasing order.	14 Marks

UNIT-IV

7	a)	Explain the general method of Branch and Bound.	7 Marks
	b)	Explain the principles of LIFO Branch and Bound.	7 Marks
		(OR)	
8	a)	Write a recursive backtracking algorithm for the sum of Sub Sets problem.	7 Marks
	b)	Draw the Search Tree to color the graph with the three colors: Red, Blue, Green.	7 Marks

UNIT-V

9	a)	What is Halting Problem? Prove that the Halting Problem is NP-HARD Problem but not NP-COMPLETE.	7 Marks
	b)	Differentiate between NP-Hard and NP-Complete in detail.	7 Marks
		(OR)	
10		State and explain about Cook's theorem in detail.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

STRUCTURAL ANALYSIS - II

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Two point loads of 6kN and 8kN spaced apart cross a girder of 18m span, the 6kN load leading from left to right. Construct the maximum S.F. and B.M. diagrams, stating the absolute maximum values. 14 Marks

(OR)

2 A beam has a span of 20m. Draw the Influence line for bending moment and shear force for a section 8m from the left hand support and determine the maximum bending moment and shear force for this section due to two point loads of 8kN and 4kN at a fixed distance of 2m apart rolling from left to right with either of the loads leading. 14 Marks

UNIT-II

3 Analyze the beam shown in figure-1 by moment distribution method and draw S.F. and B.M.D diagrams due to following support settlements 0.005 and 0.010 at A and C respectively. 14 Marks

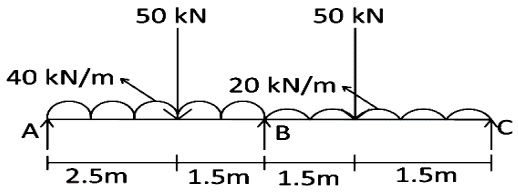


Figure-1

(OR)

4 Explain in detail about displacement method of analysis. Analyze the beam shown in figure-2 by moment distribution method and draw B.M.D. Assume EI is constant. 14 Marks

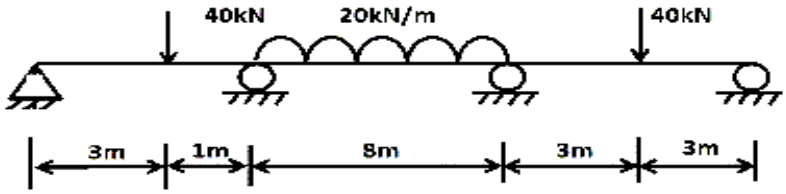
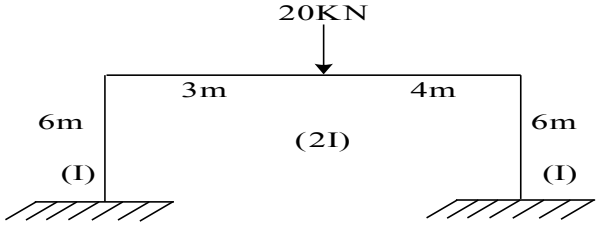


Figure-2

UNIT-III

5 Analyse the Portal frame shown in figure by Kani's method and sketch the B.M.D. 14 Marks



(OR)

6 a) Derive the strain energy in linear elastic systems for Axial loading. 7 Marks

b) State and explain the concept of Castigliano's first theorem. 7 Marks

UNIT-IV

7 What is a Tube structure in tall buildings? Explain the various types of Tube structures in detail using sketches. 14 Marks

(OR)

8 Explain the analysis of a building frame subjected to horizontal forces using Portal method with the help of an example. 14 Marks

UNIT-V

9 Define indeterminacy of structural element? Explain in detail about types of indeterminacy with neat sketches. 14 Marks

(OR)

10 Analyze the rigid frame shown in figure-3 by direct stiffness matrix method. 14 Marks

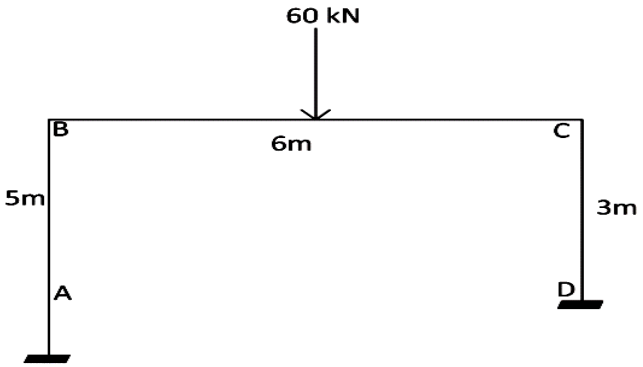


Figure-3

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

REINFORCED CEMENT CONCRETE STRUCTURES-I

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Write a short notes on: 7 Marks
i) Balanced section.
ii) Under reinforced section.
iii) Over reinforced section.

b) A rectangular beam 230mm x 560mm effective depth is reinforced with 3 no's of 16mm diameter bars. Calculate the stresses in both the materials when a bending moment of 50kN-m is applied. The materials are M 20 grade concrete and HYSD reinforcement of grade Fe 415. Use working stress method. 7 Marks

(OR)

2 Design a RC rectangular cantilever beam supported over an effective span of 5m to support an imposed load of 20kN/m. Adopt M 20 grade concrete and Fe 415 steel. Using working stress method. 14 Marks

UNIT-II

3 A reinforced concrete T-beam with an effective flange width of 1650mm slab thickness of 125mm and rib 350mm has an overall depth of 650mm the beam is reinforced with 6 bars of 25mm diameter with a cover of 50mm to the centre of reinforcement. If M 20 concrete and Fe 415 steel grades are used, calculate the moment of resistance of the section. Adopt limit state method. 14 Marks

(OR)

4 A simply supported rectangular beam of 5m span carries a uniformly distributed load of 16kN/m inclusive of its self weight. It also carries a central point load of 15kN. Find the depth and steel area for balanced design. The materials are M 20 and Fe 415 grades of concrete and steel. 14 Marks

UNIT-III

5 Design a short rectangular column of size 300mm x 500 mm to carry an ultimate load of 1500kN. The column is subjected to an ultimate moment of 180kN in major axis. Use M 25 concrete and Fe 415 Steel. 14 Marks

(OR)

6 Design a circular column to carry an axial load of 2000kN. The column has an effective length of 3m. The ends of the column are effectively held on position but not against rotation. Use M 20 concrete and Fe 415 steel. 14 Marks

UNIT-IV

7 Design a square footing to support a column of 350mm x 350mm. The column carries a load of 850kN. The allowable soil pressure is 150kN/m^2. Use M 20 concrete and Fe 415 steel for footing. Assume column is reinforced with 8 - 25mm bars. 14 Marks

(OR)

8 Design a reinforced concrete rectangular combined footing for two columns each 400mm x 400mm located 4m between centres. Each column carries an axial load of 1200kN. The safe bearing capacity of the soil is 250kN/m^2. Use M 25 concrete and Fe 415 steel. 14 Marks

UNIT-V

9 Design a one way slab simply supported on masonry walls with a clear span of 3m, to support a live load of 4kN/m^2 and floor finishes of 1.5kN/m^2. Use M 20 concrete and Fe 415 steel. 14 Marks

(OR)

10 Design a two way slab over a room 4.5m x 6m is simply supported on all four sides of 230mm walls. The slab has a bearing of 150mm on the supporting walls. The live load on the slab is 3.5kN/m^2 and floor finishes of 1.5kN/m^2. Use M 20 concrete and Fe 415 steel. 14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

WATER SUPPLY ENGINEERING

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Explain the various aspects considered by an environmental engineer while planning a water supply scheme. 7 Marks

b) In detail bring our comparison between ground water and surface water in terms of quality and treatment necessary. 7 Marks

(OR)

2 a) Estimate the population of a town in 2021 by arithmetic increase and geometric increase methods. Use the senses data given below. 7 Marks

1951	1961	1971	1981	1991	2001
246,000	386,000	694,000	960,000	1,023,000	1,099,000

b) Present the permissible drinking water limits of the following water quality parameters. Explain the effects if they exceed permissible levels. 7 Marks

(i) Fluorides. (ii) Chlorides. (iii) Iron.

UNIT-II

3 a) What are Intakes? Naming different types, explain anyone with a neat sketch. 7 Marks

b) Name the different types of materials used to convey water through pipes and explain the choice of yours in selecting the material with technical reasons. 7 Marks

(OR)

4 a) What are the functions of distribution reservoirs? How the total capacity of the reservoir is determined? 7 Marks

b) Explain functioning of Fire hydrant with a sketch. 7 Marks

UNIT-III

5 a) Considering river as a source of water supply, sketch the various units in a water treatment plant and explain the functions of each unit. 7 Marks

b) Derive an expression for surface loading for a rectangular sedimentation basin. Explain the significance of surface loading to settling velocity. 7 Marks

(OR)

6 a) With help of a sketch, explain the working of a rapid sand filter. What are the advantages of RSF over SSF? 7 Marks

b) What do you mean by chlorination and explain advantages of chlorination over other methods of disinfection. 7 Marks

UNIT-IV

7 a) What do you mean by Aeration? Explain the various types of aeration adopted in water treatment. 7 Marks

b) Discuss the disadvantages of hard water. Explain two methods used in industry to remove permanent hardness. 7 Marks

(OR)

8		Write a detailed notes on:	
		i) Desalination techniques.	7 Marks
		ii) Membrane filtration.	7 Marks

UNIT-V

9	a)	Sketch "Ferrule and Goose neck" and explain functions of each.	7 Marks
	b)	Present a general layout of water supply in single storey buildings.	7 Marks
		(OR)	
10	a)	Brief the principles involved in laying pipelines in the premises of buildings.	7 Marks
	b)	What do you understand by "Pressure release valve" and "Check Valve"?	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

SOIL MECHANICS

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Describe the classification of Fine Grained Soils. 6 Marks

b) Derive the expression among the unit weight of soil mass in terms of its void ratio, specific gravity and degree of saturation. 8 Marks

(OR)

2 A partially saturated soil sample has a natural water content of 15% and bulk unit weight of 20kN/m^3. Compute the degree of saturation, void ratio and porosity if the specific gravity of soils is 2.7. If the subsequently the soil gets saturated, find out the dry, saturated and submerged unit weights. 14 Marks

UNIT-II

3 a) Explain the method of determining coefficient of permeability of fine grained soil. 8 Marks

b) Compute the average coefficient of permeability in directions parallel and perpendicular to the bedding planes of a layered soil deposit consisting of three layers of total thickness 3.4m. The top and bottom layers are each 0.7m thick. The values of coefficient of permeability for the top, middle and bottom layers are *k, 2k* and *3k* respectively, where $k = 15 \times 10^{-4}$ cm/sec. 6 Marks

(OR)

4 a) Discuss the capillary phenomenon and quick sand condition. 6 Marks

b) At a construction site, a 3m thick clay layer is followed by a 4m thick gravel layer, which is resting on an impervious rock. A load of 25kN/m^2 is applied suddenly at the surface. The saturated unit weights are 19kN/m^3 and 20kN/m^3, for the clay and the gravel layers respectively. The water table is at the surface. Draw the total, neutral and effective stress variation diagram. 8 Marks

UNIT-III

5 a) Describe briefly about pressure bulb. 4 Marks

b) The four legs of a transmission tower form in plan a square of side 4m and together carry a total load of 200kN. Compute the increase in vertical stress at a depth of 3m vertically below a Leg. Use bousinesq's theory. 10 Marks

(OR)

6 a) Describe the factors affecting compaction of soil. 6 Marks

b) The soil in a borrow pit has a void ratio of 0.8. A fill in-place volume of 2000m^3 is to be constructed with an in-place dry density of 18.8kN/m^3. If the owner of borrow area is to be compensated at Rs.3.00/- per m^3 of excavation. Determine the cost of compensation. 8 Marks

UNIT-IV

7 a) State the assumptions made in one dimensional consolidation theory. 5 Marks

b) Explain Logarithmic time fitting method to determine coefficient of consolidation. 9 Marks

(OR)

8 An undisturbed sample was collected from a clay stratum of 2m thick and tested in laboratory. The coefficient of consolidation was found to be $2 \times 10^{-4} cm^2/s$ for $1.2 kg/cm^2$. If a structure is built on the clay stratum with a $12 t/m^2$ pressure, how much time will it take to attain half the consolidation settlement? Assume double drainage. 14 Marks

UNIT-V

9 a) State the advantages and limitations of direct shear test. 8 Marks

b) Describe pore pressure parameters. State its importance in shear strength of soils. 6 Marks

(OR)

10 The following are the results of a Triaxial test. Determine Shear strength parameters. 14 Marks

Sample No	Cell Pressure (kN/m^2)	Deviator stress (kN/m^2)
1	50	350
2	100	440
3	150	530

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

ENGINEERING HYDROLOGY

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe the hydrologic cycle with a neat sketch.	8 Marks
	b)	Describe the principle of working of a tipping bucket type recording rain gauge with a neat sketch.	6 Marks
		(OR)	
2	a)	Discuss the various practical applications of hydrology.	7 Marks
	b)	Explain the weather seasons of India with particular reference to southwest monsoon season.	7 Marks

UNIT-II

3	a)	Explain the evaporation process. What are the factors that affect the evaporation from a water body?	6 Marks
	b)	What is 'evapotranspiration'? Discuss the various factors affecting evapotranspiration.	8 Marks
		(OR)	
4	a)	Define infiltration. Explain the difference between infiltration and infiltration capacity rate. What factors affect infiltration?	6 Marks
	b)	Explain the term 'infiltration indices'. What are the different infiltration indices? Explain.	8 Marks

UNIT-III

5	a)	What is runoff? Explain the various components of runoff.	7 Marks
	b)	Explain 'flow mass curve' and 'flow duration curve'.	7 Marks
		(OR)	
6	a)	What are the various climate factors affecting runoff? Explain.	7 Marks
	b)	Explain with a neat sketch, the method of measuring the velocity at a point in a stream using a current meter.	7 Marks

UNIT-IV

7	a)	Why is base flow separated from total runoff? Describe any one method of separating base flow from the total runoff.	7 Marks
	b)	What is Unit Hydrograph? Explain how a 2D hour Unit Hydrograph is derived from a D hour Unit Hydrograph.	7 Marks
		(OR)	
8	a)	Define design flood. Explain the method of design flood estimation using the rational method.	7 Marks
	b)	The peak of a flood hydrograph due to a 6-h storm is 470m^3/s. The mean depth of rain fall is 8.0cm. Assume an average infiltration loss of 0.25cm/h and a constant base flow of 15m^3/s and estimate the peak discharge of the 6-h unit hydrograph for this catchment.	7 Marks

UNIT-V

9 a) Describe a commonly used method of estimating the trap efficiency of a reservoir. 7 Marks

b) List the factors affecting the density of sediment deposited in a reservoir. What is the commonly used method of estimating the average density of sediment deposited over a period of T years in a reservoir? 7 Marks

(OR)

10 Briefly explain the following: 14 Marks

i) Erosion index.
ii) Sediment delivery ratio.
iii) Bed load.
iv) Suspended load.
v) Reservoir delta.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

CONTROL SYSTEMS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

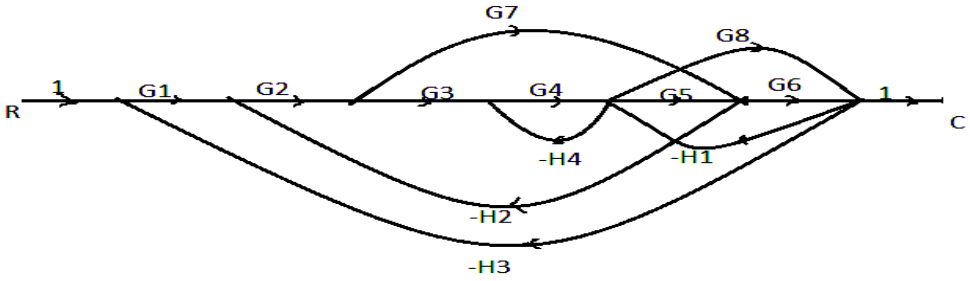
UNIT-I

1 a) What is control system? Explain the components of control system with the help of block diagram. 6 Marks

b) What is block diagram? Explain all the rules used for block diagram reduction method. 8 Marks

(OR)

2 a) Find the transfer function of the signal flow graph shown in figure by using Mason's gain formula. 7 Marks



b) Explain the construction and working of Synchro. 7 Marks

UNIT-II

3 a) Derive an equation for time response of second order control system subjected to Step function. 7 Marks

b) The open loop transfer function of a unity feedback system is given by $G(s) = \frac{K}{S(1+ST)}$ where T and K are constants having positive values. By what factor (i) the amplifier gain be reduced so that the peak overshoot of unit step response of the system is reduced from 75% to 25%. (ii) The damping ratio increases from 0.1 to 0.6. 7 Marks

(OR)

4 a) Explain the generalized error coefficients for step input ramp and parabolic inputs. 7 Marks

b) A unity feedback system has $G(s) = \frac{1}{S(1+2S)}$. The input to the system is described by $r(t) = 2 + 4t + 6t^2 + 2t^3$. Determine the generalized error coefficients and express the steady state error as a function of time. 7 Marks

UNIT-III

5 a) The open loop transfer function of a feedback control system is given by $G(s)H(s) = \frac{K}{s(s+4)(s^2+2s+2)}$. Using Routh Criterion determine the range of K for which the system is stable. 7 Marks

b) Discuss the effect of adding the Poles and Zeros to given system on the root loci. 7 Marks

(OR)

6 Draw the complete root locus of the system with $G(s)H(s) = \frac{K(s^2 + 4s + 5)}{s^2(s^2 + 6s + 9)}$ and determine the range of K for which system is stable. 14 Marks

UNIT-IV

7 a) The open loop transfer function of a unity feedback control system is given below $G(s) = \frac{50}{S(S + 5)}$. Draw the Nyquist plot and comment on the stability of the closed loop system. 8 Marks

b) A second order system has overshoot of 50% and period of oscillation 0.2s in step response. Determine resonant peak, resonant frequency and bandwidth. 6 Marks

(OR)

8 a) Derive expressions for Resonant peak magnitude and resonant frequency. 8 Marks

b) Derive the transfer functions for Lead and Lag compensation networks. 6 Marks

UNIT-V

9 a) Explain the State space representation for electrical network and write its advantages over transfer function representation. 6 Marks

b) Determine the transfer matrix from the data given: 8 Marks

$A = \begin{bmatrix} -3 & 1 \\ 0 & -1 \end{bmatrix}$, $B = \begin{bmatrix} 1 \\ 1 \end{bmatrix}$, C=$\begin{bmatrix} 1 & 1 \end{bmatrix}$, $D = 0$ and draw its block diagram.

(OR)

10 a) What is state transition matrix and write its properties. 5 Marks

b) Diagnalize the system matrix A=$\begin{bmatrix} 0 & 1 & 0 \\ 3 & 0 & 2 \\ -12 & -7 & -6 \end{bmatrix}$ and also determine its characteristic equation. 9 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

COMPUTER ORGANIZATION AND ARCHITECTURE

[Electrical and Electronics Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Interpret the binary division to an example -7/-3.	7 Marks
	b)	Develop a flow chart for the Booth's multiplication algorithm.	7 Marks
		(OR)	
2	a)	Distinguish between floating point addition and subtraction using flowcharts.	7 Marks
	b)	Specify IEEE 754 floating point formats for half, single, double and Quad precision numbers.	7 Marks

UNIT-II

3	a)	Register A holds the 8-bit binary 11011001. Determine the B operand and the logic micro operation to be performed in order to change the value in A to 01101101.	7 Marks
	b)	Derive a combinational circuit that selects and generates any of 16 logic micro operations.	7 Marks
		(OR)	
4	a)	Explain the three different types of instruction formats used in basic computer.	8 Marks
	b)	Differentiate the characteristics of RISC and CISC.	6 Marks

UNIT-III

5	a)	Formulate a mapping procedure that provides 8 consecutive micro instructions for each routine. The operation code has 6 bits and the control memory has 2048 words.	7 Marks
	b)	Write a symbolic microprogram routine for the ISZ (Increment and Skip if Zero) instruction.	7 Marks
		(OR)	
6	a)	Give the internal organization of 2M x 8 dynamic memory chip.	7 Marks
	b)	How is mapping done using Associative Mapped Cache technique?	7 Marks

UNIT-IV

7	a)	Discuss in detail the microprocessor evolution.	7 Marks
	b)	List various addressing modes of 8085.	7 Marks
		(OR)	
8	a)	Write sample instructions and their interpretations for data transfer instruction of 8085 microprocessor.	7 Marks
	b)	Write about T-state and Machine cycle.	7 Marks

UNIT-V

9	a)	Write an assembly language program for an 8085 processor for adding two binary numbers.	7 Marks
	b)	With the help of a neat sketch, explain memory mapped I/O interfacing.	7 Marks
		(OR)	
10		Explain 8085 interrupt process in detail.	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

SYNCHRONOUS MACHINES

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the harmonics? Explain how the harmonics can be suppresses in an alternator.	6 Marks
	b)	A 3-phase, star connected, 4 pole, 1500r.p.m alternator has 72 slots on its periphery. Each slot has 12 conductors and winding is short pitched by 2 slots. Find pitch factor and distribution factor. Also, calculate induced EMF between lines if the flux of 0.04 weber is distributed sinusoidally. All conductors in phase are connected in series.	8 Marks
		(OR)	
2	a)	Mention the differences between salient pole and non salient pole synchronous machine.	7 Marks
	b)	The effective resistance of a 2200V, 50Hz, 440KVA, single phase alternator is 0.5. On short circuit, a field current of 4A gives the full load current. The EMF on open circuit for the same field current is 1160V. Find Synchronous impedance, Synchronous reactance and percentage regulation at 0.6 p.f lagging.	7 Marks

UNIT-II

3	a)	Describe the slip test method for measurement of Xd and Xq of synchronous machine.	7 Marks
	b)	Explain the Ampere-Turn method to find the voltage regulation of an alternator.	7 Marks
		(OR)	
4	a)	What are the merits and limitations of ZPF method?	6 Marks
	b)	The following test results are obtained from a 3-phase, 6000KVA, 6600V, star connected, 2 pole, 50Hz turbo alternator: with a field current of 125A, the open circuit voltage is 8000V at the rated speed; with the same field current and rated speed the short circuit current is 800A. At the rated full load, the resistance drop is 3%. Find the regulation of alternator on full load and at a p.f. of 0.8 lagging.	8 Marks

UNIT-III

5	a)	Explain all the necessary conditions for successful parallel operation of alternators.	7 Marks
	b)	Derive the expression for time period of oscillation while synchronization.	7 Marks
		(OR)	
6	a)	What do you mean by synchronization of alternators? Describe any one method of synchronization.	6 Marks
	b)	Two three phase alternators are operating in parallel. The rating of one machine is 50MW and that of the other is 100MW. Both alternators are fitted with speed governors having a droop of 4%. How will the machines share a common load of 100MW?	8 Marks

UNIT-IV

7 a) A 3-phase, 6600V, 50Hz, star-connected synchronous motor takes 50A current. The resistance and synchronous reactance per phase are 1 Ω and 20 Ω respectively. Find the power supplied to the motor and induced **emf** for a power factor of (i) 0.8 lagging and (ii) 0.8 leading. 7 Marks

b) The input to an 11000V, 3-phase, star-connected synchronous motor is 60A. The effective resistance and synchronous reactance per phase are 1Ω and 30Ω respectively. Find (i) the power supplied to the motor (ii) mechanical power developed and (iii) induced **emf** for a power factor of 0.8 leading. 7 Marks

(OR)

8 a) Explain the effect of varying excitation on armature current and power factor in a synchronous motor. Draw V-curves and state their significance. 7 Marks

b) What is synchronous condenser? Explain with help of phasor diagram its operation. What are its applications? 7 Marks

UNIT-V

9 a) Explain the operation of single phase induction motor based on double filed revolving theory. 7 Marks

b) Find the mechanical power output of 185W, 4 pole, 110V, 50Hz single-phase induction motor, whose constants are given below at a slip of **0.05.R_1 = 1.86 Ω , X_1= 2.56 Ω, X_φ = 53.5 Ω , R_2 = 3.56 Ω , X_2 = 2.56 Ω**, Core loss = 3.5 W, Friction and windage loss = 13.5 W. 7 Marks

(OR)

10 a) Describe the operation of a variable reluctance type stepper motor. What is micro- stepping? 7 Marks

b) What are the advantages and disadvantages of stepper motors? 7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

TRANSMISSION OF ELECTRIC POWER

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the method of geometric mean distances to calculate the inductance and capacitance of a line having several conductors connected in parallel for each phase.	7 Marks
	b)	Two generators are connected in parallel to the same bus and each have subtransient reactance of 0.14 p.u. Generator 1 is rated 2500 KVA, 2.4 KV and generator 2 is rated 5000 KVA, 2.4 KV. Find the p.u. reactance of each generator on a 15 MVA, 2.4 KV base. What is the p.u. reactance of a single generator equivalent to the two generators in parallel on a 15 MVA, 2.4 KV base?	7 Marks

(OR)

2	a)	Derive the expression for capacitance of a two wire line. What is the effect of ground on the capacitance?	8 Marks
	b)	A three phase 50Hz line consists of three conductors each of diameter 21mm. The spacing is a-b: 3m; b-c: 5m; c-a: 3.6m. Find the inductive reactance per phase per km.	6 Marks

UNIT-II

3	a)	Define efficiency of transmission line.	2 Marks
	b)	A 3-Φ transmission line delivers 20MW at a power factor of 0.8 lagging, 32KV. The transmission constants for the line considered as Π network are as follows: A=D=1; B=(1+j3)Ω; C=$2x10^{-4}$S. Determine the sending end voltage and current of the line.	12 Marks

(OR)

4		A 3-Φ line, 10km long delivers 5MW at 11KV, 50Hz, 0.8 power factor lagging. The power loss in the line is 10% of the power delivered. The line conductors are situated at the corners of an equilateral triangle of 2m side. Calculate the voltage and the power factor of the sending end.	14 Marks

UNIT-III

5	a)	Derive an expression for the velocity of propagation of electric waves in terms of the line inductance and the capacitance.	7 Marks
	b)	A transmission line has a capacitance of 0.012μF/km and an inductance of 1.8mH/km. This overhead line is continued by an underground cable with a capacitance of 0.45μF/km and an inductance of 0.3mH/km. Calculate the maximum voltage occurring at the junction of line and cable when a 20KV surge travels along the cable towards the overhead line.	7 Marks

(OR)

6		Derive the wave equations. Explain the significance of the solution of the wave equation.	14 Marks

UNIT-IV

7 a) What is the purpose of guard ring which is being used in the suspension string type insulator? Deduce the relation for determining the capacitance formed by the ring. 7 Marks

b) Explain in brief : 7 Marks
(i) disadvantages of corona. (ii) different methods of reducing loss.

(OR)

8 a) Obtain expressions for the voltages across 4 units of an insulator string in terms of voltage across its top most unit. 7 Marks

b) Determine the critical disruptive voltage and corona loss for a 3-phase line operating at 110kV which has conductors of 1.25cm diameter arranged in 3.05m delta spacing. Assume air density factor 0f 1.07 and the dielectric strength of air to be 21kV/cm. 7 Marks

UNIT-V

9 a) Explain the effect of wind on sag. 5 Marks

b) A transmission line has a span of 180m between level supports. The conductor has cross sectional area of 129sq-mm, weighs 1.17kg-f/m and has a breaking stress of 42kg-f/sq-mm. Calculate the sag for a factor of safety of 5, allowing for a maximum wind pressure of 125kg-f/sq-m of projected surface. 9 Marks

(OR)

10 What is grading of cables explain the grading methods in detail. 14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

DYNAMICS OF MACHINERY

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 The following data relate to a connecting rod of a reciprocating engine. 14 Marks
Mass = 55kg.
Distance between bearings = 850mm; Diameter of small end bearing = 75mm;
Diameter of big end bearing = 100mm,
Time of oscillation when connecting rod is suspended from small end = 1.83sec,
Time of oscillation when connecting rod is suspended from big end = 1.68sec.

Determine:
a) The radius of gyration of the rod about an axis passing through the C.G perpendicular to the plane of oscillation.
b) The dynamically equivalent system for the connecting rod constituted of two masses, one of which is situated at small end centre.

(OR)

2 A petrol engine with a speed of 3000 r.p.m has a stroke of 8.75cm. The weight of the connecting rod is 1.75kgf. The length of connecting rod from centre to centre is 17.5cm. The centre of gravity from big end centre is 5.75cm. The radius of gyration about an axis through the center of gravity and perpendicular to the connecting rod is 7.5cm. Find the inertia force of the connecting rod and its direction with the centre line of the connecting rod when the crank makes an angle of 40^0 with I.D.C. Also find inertia torque on the crank shaft. 14 Marks

UNIT-II

3 A punching machine makes 25 working strokes per minute and is capable of punching 25mm diameter holes in 18mm thick steel plates having an ultimate shear strength 300Mpa.The punching operation takes place during 1/10 of a revolution of the crank shaft. Estimate the power needed for the driving motor, assuming a mechanical efficiency of 95%. Determine suitable dimensions for the rim cross-section of the fly wheel, having width equal to twice thickness. The fly wheel is to revolve at 9 times the speed of the crank shaft.The permissible coefficient of fluctuation of speed is 0.1. The fly wheel is to be made of cast iron having a density of $7250kg/m^3$. The diameter of the fly wheel must not exceed 1.4m owing to space restrictions. The hub and the spokes may be assumed to provide 5% of the rotational inertia of the wheel. 14 Marks

(OR)

4 An aeroplane flying at 240km per hour turns towards left and completes a quarter circle of 60m radius. The mass of the rotary engine and the propeller of the plane amounts to 450kg with a radius of gyration of 320mm. The engine speed is 2000r.p.m clock wise, when viewed from the rear. Determine the gyroscopic couple on the air craft and state its effect. In what way is the effect changed when; 14 Marks
a) the aero plane turns towards right.
b) the engine rotates clock wise when viewed from front (nose end) and aero plane turns (i) Left (ii) Right

UNIT-III

5 A simple band brake is applied to a rotating drum of diameter 500mm. The angle of lap of the band on the drum is 270^0. One end of the band is attached to a fulcrum pin of the lever and the other end is to a pin 100 mm from the fulcrum. If the co-efficient of friction is 0.25 and a braking force of 90N is applied at a distance of 600mm from the fulcrum, find the braking torque when the drum rotates in the; 14 Marks

i) anti-clockwise direction ii) clockwise direction.

(OR)

6 a) Describe with a neat sketch the working of a single plate clutch. 6 Marks

b) Differentiate between: 8 Marks

i) Brakes and dynamometer

ii) Absorption dynamometer and Transmission dynamometer

UNIT-IV

7 a) A mass is attached to a shaft which is rotating at an angular speed of w rad/s. Describe the procedure of balancing this mass by (i) A single mass only (ii) Two masses in different planes. 7 Marks

b) Three masses of 8kg, 12kg and 15kg attached at radial distances of 80mm, 100mm and 60mm respectively to a disc on a shaft are in complete balance. Determine the angular positions of the masses 12kg and 15kg relative to 8kg mass. 7 Marks

(OR)

8 a) Describe the function of a simple Watt governor. What is its limitation? 7 Marks

b) Each ball of a Porter governor has a mass of 6kg and the mass of the sleeve is 40kg. The upper arms are 300mm long and are pivoted on the axis of rotation whereas the lower arms are 250mm long and are attached to the sleeve at a distance of 40mm from the axis. Determine the equilibrium speed of the governor for a radius of rotation of 150 mm for 1% change in speed. Also find the effort and the power for the same speed change. 7 Marks

UNIT-V

9 a) What do you mean by period of vibration, cycle, frequency and resonance as applied to vibratory motion? 7 Marks

b) A shaft is simply supported at the ends and is of 20mm in diameter and 600mm in length. The shaft carries a load of 19.62N at its centre. The weight of the shaft per metre length is 248.2N. Find the critical speed of the shaft. Take Young's modulus as $200GN/m^2$. 7 Marks

(OR)

10 a) Define the term 'Magnification factor'. 7 Marks

b) Determine the frequency of the free vibrations, when a body of mass 20kg is suspended from a spring which deflects 15mm under the weight of the body. Also find the viscous damping force required to make the motion a period at a speed of 1m/s. If when damped to this extent, a distinguish force having a maximum value of 187.5N and vibrating at 8Hz is made to act on the body, fine the amplitude of the ultimate motion. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

INDUSTRIAL ENGINEERING AND MANAGEMENT

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		What is meant by systems approach? Briefly explain the importance of systems approach to management.	14 Marks
		(OR)	
2		Explain the different functions of management with suitable examples.	14 Marks

UNIT-II

3		State the different types of maintenance. Explain their importance.	14 Marks
		(OR)	
4	a)	What is redundancy?	2 Marks
	b)	How many types of redundancies do you know?	2 Marks
	c)	Explain the significance of providing such redundancies and their consequences for engineering systems with suitable examples.	10 Marks

UNIT-III

5		Define productivity and explain the role of work study in reducing the work content.	14 Marks
		(OR)	
6		What is performance rating? Explain its significance. Briefly explain the rating methods.	14 Marks

UNIT-IV

7	a)	List out assumptions in EOQ.	7 Marks
	b)	Derive an equation for EOQ.	7 Marks
		(OR)	
8		Determine EOQ and total cost for the following. i) Annual demand = 96000 units. ii) Ordering cost = 75/order . iii) Carrying Cost = 10%. iv) Purchase cost = 30/unit.	14 Marks

UNIT-V

9		Define quality control and process control with their objectives and also with suitable examples.	14 Marks
		(OR)	
10		What is control chart? Give the classification and explain any two types of control charts.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

THERMAL ENGINEERING - II

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the working of Lamont with a neat sketch.	7 Marks
	b)	List out the boiler accessories and explain any one of them with a neat sketch.	7 Marks
		(OR)	
2	a)	Explain the working of Locomotive Boiler with a neat sketch.	7 Marks
	b)	What is an air preheater? Explain its working with a neat sketch.	7 Marks

UNIT-II

3	a)	Why is Rankine cycle modified? Derive an expression for the efficiency of modified Rankine cycle.	7 Marks
	b)	Derive an expression for draught produced in terms of height of chimney, ambient and flue gas temperatures. State clearly the assumptions made.	7 Marks
		(OR)	
4	a)	State the advantages of artificial draught over natural draught.	4 Marks
	b)	In a regenerative cycle the inlet conditions are 40 bar and 400^{0}C. steam is bled at 10 bar in regenerative heating. The exit pressure is 0.8 bar. Neglecting pump work, determine the efficiency of the cycle.	10 Marks

UNIT-III

5	a)	Derive an expression for condition of maximum discharge through a nozzle.	7 Marks
	b)	A surface condenser is designed to handle 10000kg of steam per hour. The steam enters at 0.08 bar absolute and 0.9 dryness and the condensate leaves at the corresponding saturation temperature. The pressure is constant throughout the condenser. Estimate the cooling water flow rate per hour, if the cooling water temperature rise is limited to 10^{0}C.	7 Marks
		(OR)	
6	a)	With the help of neat sketch, explain working principle of Edward's air pump.	7 Marks
	b)	Dry saturated steam at 10 bar is expanded isentropically in a nozzle to 0.1 bar. Find the dryness fraction of steam at the exit. Also find the velocity of steam leaving the nozzle when; i) the initial velocity is negligible. ii) the initial velocity of steam is 135 m/s.	7 Marks

UNIT-IV

7	a)	Distinguish between impulse and reaction turbine.	7 Marks
	b)	Steam leaves the ring of nozzles of an impulse turbine at 450m/s. The velocity is compounded in two rings of moving blade separated by a ring of fixed blades. The moving blades are symmetrical and their tip angles are 30^0, the blade velocity is 75m/s. The friction for each ring of fixed and moving blades is 0.9. Determine the power developed and blade efficiency if the steam flow rate is 5kg/s.	7 Marks
		(OR)	

8	a)	Explain the principle of working of an impulse turbine and also draw the velocity triangles.	7 Marks
	b)	A reaction turbine has a mean diameter of blade rings of 100cm. The motor rotates at 200 r.p.m. The blade speed ratio is 0.4. The blades are equiangular. The steam enters at 20^0 to the plane of rotation of the blades. Friction coefficient for the blades is 0.9. Find the work output, if the mass flow rate of steam is 22kg/s.	7 Marks

UNIT-V

9	a)	What is meant by jet propulsion system?	7 Marks
	b)	Derive efficiency of a diffuser. Show it on h-s plot.	7 Marks

(OR)

10		What are the methods of improving the thermal efficiency of simple open cycle gas turbine? Discuss the methods of controlling the gas turbines.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

MACHINE TOOLS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) In an orthogonal cutting test with a tool of rake angle 10^0, the following observations are made. Chip thickness ratio = 0.3, Horizontal component of force = 1300N, Vertical component of force = 1700 N. From Merchant's theory, calculate various components of forces. 9 Marks

b) Explain various types of chips produced during metal cutting. 5 Marks

(OR)

2 a) Explain orthogonal and oblique cutting. 6 Marks

b) What is machining time? Find the time required for one complete cut on a piece of work 350mm long and 50mm in diameter. Cutting speed is 35m/min and feed is 0.5mm/rev. 8 Marks

UNIT-II

3 a) Discuss the effects of tool geometry, feed, depth of cut and cutting speed on tool wear. 7 Marks

b) Describe briefly about taper turning methods. 7 Marks

(OR)

4 a) The following data were recorded while turning a work piece with a lathe: cutting speed = 30m/min; feed rate = 0.4mm/rev; depth of cut = 3.0mm; tool life =105minutes. The following relation for tool life is given for this operation: 8 Marks

$$VT^{0.12}f^{0.7}d^{0.3} = C$$

If the cutting speed is increased by 25%, what will be the effect on tool life?

b) Distinguish between turret and capstan lathes with neat sketches. 6 Marks

UNIT-III

5 With a neat sketch, mention the various parts and the working principle of a planning machine. 14 Marks

(OR)

6 Classify the drilling machines and mention their applications. With a neat sketch explain the various parts and their uses of a radial drilling machine. 14 Marks

UNIT-IV

7 a) With a neat sketch, explain a surface grinding machine. 8 Marks

b) Explain wheel balancing and wheel dressing. 6 Marks

(OR)

8 a) Explain the specification and selection of a grinding wheel. 8 Marks

b) Compare grinding, lapping and honing. 6 Marks

UNIT-V

9 a) Explain various milling operations with a neat sketch. 6 Marks

b) Explain the construction details of a box type jig with a suitable sketch. 8 Marks

(OR)

10 a) Sketch and explain universal milling machine. 7 Marks

b) Explain the design principles of jigs and fixtures. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

DESIGN OF MACHINE ELEMENTS-I

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe the general considerations in design.	7 Marks
	b)	Explain the mechanical properties of engineering materials.	7 Marks
		(OR)	
2	a)	Derive an expression for the impact stress induced due to a falling load.	7 Marks
	b)	The load on a bolt consists of an axial pull of 10kN together with a transverse shear force of 5kN. Find the diameter of bolt required according to: i. Maximum principal stress theory. ii. Maximum shear stress theory. iii. Maximum principal strain theory. iv. Maximum strain energy theory. v. Maximum distortion energy theory.	7 Marks

UNIT-II

3	a)	How to reduce the stress concentration in threaded members?	4 Marks
	b)	A hot rolled steel shaft is subjected to a torsional moment that varies from 330N-m clockwise to 110N-m counterclockwise and an applied bending moment at a critical section varies from 440N-m to 220N-m. The shaft is of uniform cross-section and no keyway is present at the critical section. Determine the required shaft diameter. The material has an ultimate strength of 550MN/m^2 and yield strength of 410MN/m^2. Take the endurance limit as half the ultimate strength, factor of safety of 2, size factor of 0.85 and a surface finish factor of 0.62.	10 Marks
		(OR)	
4	a)	Write short note on the following. i) Notch sensitivity. ii) Endurance limit. iii) Goodman's line.	7 Marks
	b)	A steel rod is subjected to a reversed axial load of 180kN. Find the diameter of the rod for a factor of safety of 2. Neglect column action. The material has an ultimate tensile strength of 1070MPa and yield strength of 910MPa. The endurance limit in reversed bending may be assumed to be one-half of the ultimate tensile strength. Other correction factors may be taken as follows: For axial loading = 0.7; For machined surface = 0.8; For size = 0.85; For stress concentration = 1.0.	7 Marks

UNIT-III

5	a)	Discuss the bolt of uniform strength in detail.	7 Marks
	b)	A steam engine cylinder has an effective diameter of 350mm and the maximum steam pressure acting on the cylinder cover is 1.25N/mm^2. Calculate the number and size of studs required to fix the cylinder cover, assuming the permissible stress in the studs as 33MPa.	7 Marks
		(OR)	

6	a)	What are the different types of failures in riveted joint?	7 Marks
	b)	Two plates of 10mm thickness each are to be joined by means of a single riveted double strap butt joint. Determine the rivet diameter; rivet pitch, strap thickness and efficiency of the joint. Take the working stresses in tension and shearing as 80MPa and 60MPa respectively.	7 Marks

UNIT-IV

7	a)	Give the different criteria of designing a shaft.	7 Marks
	b)	A shaft supported at the ends in ball bearings carries a straight tooth spur gear at its mid span and is to transmit 7.5kW at 300 r.p.m. The pitch circle diameter of the gear is 150mm. The distances between the centre line of bearings and gear are 100mm each. If the shaft is made of steel and the allowable shear stress is 45MPa, determine the diameter of the shaft. Show in a sketch how the gear will be mounted on the shaft; also indicate the ends where the bearings will be mounted. The pressure angle of the gear may be taken as 20°.	7 Marks

(OR)

8	a)	What is the function of a key? What are the advantages and disadvantages of key joint?	4 Marks
	b)	Design a cast iron protective type flange coupling to transmit 15kW at 900 r.p.m. from an electric motor to a compressor. The service factor may be assumed as 1.35. The following permissible stresses may be used : Shear stress for shaft, bolt and key material = 40MPa; Crushing stress for bolt and key = 80MPa; Shear stress for cast iron = 8MPa. Draw a neat sketch of the coupling.	10 Marks

UNIT-V

9		Design a sleeve and cotter joint to resist a tensile load of 60kN. All parts of the joint are made of the same material with the following allowable stresses : $\sigma t = 60$ MPa ; $\tau = 70$ MPa ; $\sigma c = 125$ MPa.	14 Marks

(OR)

10		Design a knuckle joint to transmit 150kN. The design stresses may be taken as 75MPa in tension, 60MPa in shear and 150MPa in compression.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

AUTOMOBILE ENGINEERING

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the importance of oil filters and oil pump in a lubrication system of an automobile.	7 Marks
	b)	What is MPFI and explain working of MPFI system in detail?	7 Marks
		(OR)	
2	a)	Explain with a simple sketch, concept of crankcase ventilation with its importance.	7 Marks
	b)	Explain the working of a fuel pump used in a commercial automobile.	7 Marks

UNIT-II

3	a)	Outline the forced circulation cooling system and explain the working principle in detail. List out applications.	7 Marks
	b)	Why cooling is necessary for IC Engine? Why overheating and over cooling of IC is harmful.	7 Marks
		(OR)	
4	a)	Sketch and explain the electronic ignition system with contact breakers. List out advantages.	7 Marks
	b)	Discuss in detail the construction of an ignition coil.	7 Marks

UNIT-III

5	a)	Explain function and operation of Exhaust Gas Recirculation (EGR) system**.**	7 Marks
	b)	Differentiate between electronic catalytic converter and conventional catalytic converter.	7 Marks
		(OR)	
6	a)	Find the alternative fuels for automotive vehicles? List out the advantages of LPG operated vehicles over gasoline operated vehicles.	7 Marks
	b)	What are main sources of pollutants from gasoline / petrol engine?	7 Marks

UNIT-IV

7	a)	Explain with schematic diagram, construction and working of synchromesh gear box.	7 Marks
	b)	Draw Davis steering mechanism and explain its working with limitations if any.	7 Marks
		(OR)	
8	a)	Give a brief description of working of automatic transmission system.	7 Marks
	b)	What is steering geometry, explain it in detail?	7 Marks

UNIT-V

9	a)	Discuss the working of torsion bar spring and list out notable characteristics of torsion bar.	7 Marks
	b)	Explain the working of Mac Pherson strut suspension system with a neat sketch.	7 Marks
		(OR)	
10	a)	State the need of breaking system in automotive vehicles. How breaks are classified?	7 Marks
	b)	Explain working principle of hydraulic breaking system with a neat sketch. List out advantages.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

ANTENNAS AND PROPAGATION

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Briefly explain the following terms related to antenna: (i) Antenna apertures. (ii) Radiation resistance. (iii) Patterns. (iv) Beam width.	14 Marks
		(OR)	
2	a)	Explain about the current distributions of half wave dipole.	6 Marks
	b)	The maximum radiation intensity of 96% efficiency antenna is 180mW/unit solid angle. Find the directivity and gain (dB), when the; (i) input power is 125.66 mW (ii) radiated power is 125.66mW.	8 Marks

UNIT-II

3	a)	In a linear array of 4 isotropic elements spaced $\lambda/2$ apart and with equal currents fed in phase, plot the radiation pattern in polar coordinates.	7 Marks
	b)	Derive the Fourier Transform method of synthesis of array.	7 Marks
		(OR)	
4	a)	Derive the expression for the array factor of a linear broadside array of '***n***' elements.	7 Marks
	b)	Derive the expressions of null-null beam width of a uniform linear array.	7 Marks

UNIT-III

5	a)	Explain the construction of horn antenna and its principle of working.	7 Marks
	b)	With neat diagrams, describe the principle of working of 3-element Yagi antenna, listing out its length and spacing requirements.	7 Marks
		(OR)	
6	a)	Explain the geometrical configuration of different reflector types in detail.	7 Marks
	b)	State the features, advantages and limitations of microstrip antenna.	7 Marks

UNIT-IV

7		Briefly explain different techniques used for measuring the gain.	14 Marks
		(OR)	
8		Explain the following terms with respect to antenna measurements. (i) reciprocity. (ii) near and far fields. (iii) coordination system. (iv) source of errors.	14 Marks

UNIT-V

9	a)	Explain the following. (i) Virtual height and skip distance. (ii) Multi-hop propagation.	8 Marks
	b)	Explain the phenomena of duct propagation.	6 Marks
		(OR)	
10	a)	Explain the characteristics of ground wave propagation.	6 Marks
	b)	Define MUF and critical frequency. Derive the expressions for the same.	8 Marks

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CODE No.:14BT50402 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

DIGITAL COMMUNICATIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Draw the model of a digital communication system and explain each block in detail.	7 Marks
	b)	What are the advantages and disadvantages of Digital Communications?	7 Marks
		(OR)	
2	a)	Explain about Uniform and Non-Uniform Quantization.	7 Marks
	b)	Draw the block diagram and explain the Delta modulation and demodulation system.	7 Marks

UNIT-II

3	a)	In a binary PCM system, the output (S/N) ratio is to be held to a minimum of 40dB. Determine the number of required levels and find the corresponding output (S/N) ratio.	8 Marks
	b)	Explain decoding noise and error threshold in PCM.	6 Marks
		(OR)	
4	a)	Derive the expression for quantization noise in DM.	6 Marks
	b)	Compare different types of DM, PCM, DPCM and ADM.	8 Marks

UNIT-III

5	a)	Write a short note on eye pattern.	7 Marks
	b)	Explain about Correlative coding.	7 Marks
		(OR)	
6	a)	Describe the working principle of QPSK with the help of a neat diagram.	7 Marks
	b)	Derive the expression for Bit Error Probability for BPSK.	7 Marks

UNIT-IV

7	a)	Define and explain the following terms: i) Information. ii) Information Rate. iii) Entropy.	6 Marks
	b)	Explain the algorithm of Shannon-Fano Encoding technique.	8 Marks
		(OR)	
8	a)	Explain the algorithm of Huffman Encoding technique.	6 Marks
	b)	Apply Huffman encoding procedure to the following set of messages having probabilities: M1 M2 M3 M4 0.1 0.2 0.3 0.4 i) Construct a binary code. ii) Determine the efficiency and redundancy.	8 Marks

UNIT-V

9 a) Explain Linear block codes using matrix description. 6 Marks

b) The generator matrix of a (7, 4) block code is given below. Find all code vectors of this code. 8 Marks

$$G = \left[\begin{array}{cccc:ccc} 0 & 0 & 0 & 1 & 1 & 0 & 1 \\ 0 & 1 & 0 & 0 & 1 & 1 & 1 \\ 0 & 0 & 0 & 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 & 1 \end{array}\right]$$

(OR)

10 a) Design a feedback shift register encoder for an (8, 5) cyclic code with a generator $\mathbf{g(x) = 1+x+x^2+x^3}$ use the encoder to find the code word for the message 10101 in systematic form. 8 Marks

b) Explain Convolution codes and their properties. 6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

DIGITAL IC APPLICATIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Explain various TTL logic familiars.	14 Marks
		(OR)	
2	a)	What kinds of transistors are used in CMOS gates and draw the 2 input XOR gate using CMOS logic?	7 Marks
	b)	Explain the electrical characteristics of BJT inverter.	7 Marks

UNIT-II

3	a)	Explain about the data types used in Verilog HDL.	7 Marks
	b)	Write a Verilog program for 4x1 MUX using behavioral modeling.	7 Marks
		(OR)	
4	a)	Write short notes on numbers used in Verilog HDL.	7 Marks
	b)	Write a Verilog program for 8 bit counter.	7 Marks

UNIT-III

5	a)	Explain the standard 3x8 decoder and implement One bit full adder using decoder.	7 Marks
	b)	Design a 4x1 multiplexer using tristate buffers.	7 Marks
		(OR)	
6	a)	Design a four bit adder subtractor circuit with enable signal to select one operation at a time.	7 Marks
	b)	Write a Verilog program for Excess-3 to BCD convert using any modeling style in Verilog HDL.	7 Marks

UNIT-IV

7	a)	Design a conversion circuit to convert T flip-flop to JK flip-flop.	7 Marks
	b)	Draw and explain the operation of positive edge triggered D flip-flop.	7 Marks
		(OR)	
8	a)	Design a conversion circuit to convert SR- flip flop to JK flip-flop.	7 Marks
	b)	Design a 4-bit, 4-state ring counter using 74x194.	7 Marks

UNIT-V

9		A ROM chip of 4,096∗ 8 bits has two chip select inputs and operates from a 5V power supply. How many pins are needed for the integrated circuit package? Draw a block diagram and label all input and output terminals in the ROM.	14 Marks
		(OR)	
10	a)	Design an 8x4 diode ROM using 74x138 for the following data starting from the first location 1,4,9,B,A,0,F,C.	7 Marks
	b)	How many 32K*8 RAM chips are needed to provide a memory capacity of 256K bytes? Explain.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

LINEAR IC APPLICATIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the building blocks of an Op-Amp.	7 Marks
	b)	Explain the characteristics of an ideal Op-Amp.	7 Marks
		(OR)	
2		Explain the frequency compensation techniques applied to operational amplifier.	14 Marks

UNIT-II

3	a)	Draw and explain the operation of a voltage to current converter.	7 Marks
	b)	Draw the circuit of a full-wave rectifier and explain how it gives the average value.	7 Marks
		(OR)	
4	a)	Explain the difference between the integrator and differentiator. How op-amp is used as an integrator? Explain.	7 Marks
	b)	With a neat sketch, explain how op-amp can be used as an instrumentation amplifier.	7 Marks

UNIT-III

5		Explain the internal structure of voltage regulator IC723. Draw a low voltage regulator circuit using IC723 and explain its operation.	14 Marks
		(OR)	
6	a)	Draw the circuit of first order active filter.	7 Marks
	b)	Design a low pass filter with a cutoff frequency of 1KHz and with a pass band gain of 5.	7 Marks

UNIT-IV

7	a)	List and explain the basic building blocks of a PLL.	7 Marks
	b)	Discuss the operation of a FSK generator using 555 timer.	7 Marks
		(OR)	
8	a)	Draw and explain the functional diagram of a 555 timer.	7 Marks
	b)	Derive the expression of time delay of an astable multivibrator.	7 Marks

UNIT-V

9	a)	Explain the operation of successive approximation type ADC.	7 Marks
	b)	Discuss about ADC specification.	7 Marks
		(OR)	
10	a)	Explain the working of inverted R-2R DAC.	7 Marks
	b)	Discuss about the features of IC1408 DAC.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

PULSE AND DIGITAL CIRCUITS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define unit-step function, ramp function and impulse function. Show that a pulse is combination of unit-step functions.	5 Marks
	b)	What is meant by linear wave shaping?	3 Marks
	c)	Why a capacitor in a high-pass RC circuit is named as blocking capacitor?	6 Marks
		(OR)	
2	a)	What is meant by piece wise-linear approximation? Draw VI characteristics of junction diode on the basis of above approximation.	8 Marks
	b)	Discuss the breakdown voltage considerations and saturation parameters of transistor.	6 Marks

UNIT-II

3	a)	Explain the operation of transistor as switch.	8 Marks
	b)	Draw the basic circuit diagram of negative peak clamper circuit and explain its operation.	6 Marks
		(OR)	
4	a)	Explain positive and negative clipping at two independent levels with neat circuit diagrams and waveforms.	8 Marks
	b)	Explain the effects of diode characteristics on clamping voltage.	6 Marks

UNIT-III

5	a)	Give the design procedure for emitter coupled monostable multivibrator.	7 Marks
	b)	Design an astable multivibrator to produce an output with 100msec ON period and 50msec OFF period for V_{CC} = 18V, h_{FE} = 60, $I_{C\,(sat)}$ = 100 μA.	7 Marks
		(OR)	
6	a)	Explain the working of collector coupled astable multivibrator with circuit diagram and wave forms.	7 Marks
	b)	Explain the use of a monostable relaxation circuit as a frequency divider with the help of neat diagram and wave forms.	7 Marks

UNIT-IV

7		Write notes on the following:	
	a)	Differentiate voltage and current time based generators.	7 Marks
	b)	Monostable blocking oscillators.	7 Marks
		(OR)	
8	a)	Draw transistor Bootstrap time base generator and explain its operation.	7 Marks
	b)	Which type of time base generator is used in electromagnetic and electrostatic deflection systems? Explain.	7 Marks

UNIT-V

9	a)	Explain bidirectional sampling gates.	6 Marks
	b)	Explain four diode and six diode sampling gates and their applications	8 Marks
		(OR)	
10	a)	Explain emitter coupled logic circuit.	5 Marks
	b)	Compare RTL, DTL and TTL logic families.	9 Marks

CODE No.:14BT50431 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

MICROPROCESSORS AND INTERFACING

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the concept of segmented memory. What are its advantages?	7 Marks
	b)	Explain the addressing modes of 8086 with sufficient examples.	7 Marks
		(OR)	
2	a)	Distinguish Macros and Procedures.	7 Marks
	b)	Write an assembly language program to arrange a given series of hexadecimal bytes in ascending order.	7 Marks

UNIT-II

3	a)	Describe the Interrupt handling mechanism of 8086.	8 Marks
	b)	Bring out the differences between static and dynamic RAM.	6 Marks
		(OR)	
4	a)	Illustrate the initialization of 8259 and describe the ICWs used to initialization.	8 Marks
	b)	Describe the signal description of 8257 DMA controller.	6 Marks

UNIT-III

5	a)	Differentiate serial and parallel communications.	6 Marks
	b)	Explain the control word formation of 8255 with suitable examples.	8 Marks
		(OR)	
6	a)	Discuss the organization and architecture of 8255 PPI IC with a functional block diagram.	7 Marks
	b)	Write a program to blink port C bit 0 of 8255. Assume address of control word register of 8255 is 83. Use Bit set/Rest mode.	7 Marks

UNIT-IV

7	a)	Discuss overrun error and framing error with reference to 8251.	6 Marks
	b)	Draw and discuss the asynchronous mode transmitter and receiver data formats of 8251.	8 Marks
		(OR)	
8	a)	Distinguish between synchronous and asynchronous serial data transmission techniques. Discuss the advantages and disadvantages.	8 Marks
	b)	Write an initialization sequence to operate 8251 in asynchronous mode with 8 bit character size, baud rate factor 64, two stop bits and odd parity enable. The 8251 is interfaced with 8086 at address 082H.	6 Marks

UNIT-V

9	a)	Describe the Interrupt handling mechanism of 8051 microcontroller.	8 Marks
	b)	Write an ALP to generate multiplication table of given integer number (< 10) and to transfer the same through serial port with 9600 baud rate.	6 Marks
		(OR)	
10	a)	Explain memory organization in 8051.	8 Marks
	b)	Explain the Read Modify Write instructions of 8051 with proper examples.	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

THEORY OF COMPUTATION

[Computer Science and Engineering, Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Design a DFA accept the following strings over the alphabets (0, 1). The set of all string that contains a pattern 11. Prove this with Mathematical Induction.	14 Marks
		(OR)	
2	a)	Write a note on NFA and compare with DFA.	7 Marks
	b)	Discuss on the relation between DFA and minimal DFA.	7 Marks

UNIT-II

3	a)	Discuss on Regular Expressions.	7 Marks
	b)	Discuss in detail about the closure properties of regular languages.	7 Marks
		(OR)	
4		Construct a non-deterministic finite automation accepting the same set of strings over **{a,b}** ending in **aba**. Use it to construct a DFA accepting the same set of strings.	14 Marks

UNIT-III

5		Construct a PDA for the given grammar **S→aSab|bSb|c.**	14 Marks
		(OR)	
6		Explain in detail about equivalence of pushdown automata and CFG.	14 Marks

UNIT-IV

7	a)	Define TURING MACHINE? Give few application of TM.	4 Marks
	b)	Design a TURING MACHINE for the language A= {02n | n ≥ 0} consisting of all strings of 0's whose length is a power of 2.	10 Marks
		(OR)	
8	a)	Construct a TURING MACHINE over Σ = {0, 1} * for a, b {W | W contain an equal number of 0's and 1's}.	8 Marks
	b)	Write short notes on equivalence of One Tape and Multi Tape Turing Machine.	6 Marks

UNIT-V

9	a)	What are Halting Problem and its significance in automata languages?	5 Marks
	b)	State Rice's theorem and the properties of Recursively enumerable language.	9 Marks
		(OR)	
10	a)	Find a MATCH (if any) in the following instance of PCP $\left(\frac{ab}{abab}\right)$.	10 Marks
	b)	Distinguish between Recursive and Recursively Enumerable Languages.	4 Marks

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CODE No.:14BT50502 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

UNIX INTERNALS

[Computer Science and Engineering, Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain in detail about the components of the System Kernel with neat block diagram.	7 Marks
	b)	Discuss about the buffer header and buffer pool.	7 Marks
		(OR)	
2	a)	Explain in detail about the process utilities.	7 Marks
	b)	Discuss about the Networking commands.	7 Marks

UNIT-II

3	a)	What is a shell? What are its responsibilities? Explain them.	7 Marks
	b)	How to redirect the input and output of a Linux programs? Explain with example.	7 Marks
		(OR)	
4	a)	Write a shell script program for AND list and OR list and also explain how it works.	7 Marks
	b)	How can you define functions in the shell script and with example?	7 Marks

UNIT-III

5	a)	Why we are using super block? What are various fields present in it? Explain.	7 Marks
	b)	How does the kernel converts the given path name into inode number?	7 Marks
		(OR)	
6	a)	Explain the procedure to create a new file descriptor by using open system call.	7 Marks
	b)	Discuss in detail about the fopen( ) and fread( ) system calls.	7 Marks

UNIT-IV

7	a)	Describe in detail about the kernel data structure for a process.	7 Marks
	b)	How the kernel checks and handles the signals when a process return from kernel mode to user mode	7 Marks
		(OR)	
8	a)	Discuss the procedure to send signal from one process to another process.	7 Marks
	b)	List and explain the steps involved in file locking.	7 Marks

UNIT-V

9	a)	Define a pipe. Explain how the data can be passed between two processes by using popen and pclose system calls.	7 Marks
	b)	Write and explain the attributes of a socket.	7 Marks
		(OR)	
10	a)	Explain how the pipes are used as standard input and output.	7 Marks
	b)	Write a socket program for working of local client.	7 Marks

CODE No.:14BT51002 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

INDUSTRIAL INSTRUMENTATION-I

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain with a neat sketch, the working of any type of Comparator and show clearly the advantages of magnification adopted.	7 Marks
	b)	Describe how a Sine Bar is used for measuring angles and also for locating work at a given angle.	7 Marks
		(OR)	
2	a)	What is a Comparator? Classify the different types of Comparators and compare them.	7 Marks
	b)	Describe the measurement of diameter using Telescopic Internal Gauge.	7 Marks

UNIT-II

3	a)	Describe the measurement of force using Analytical Balance.	7 Marks
	b)	Explain the working of Load Cell method used for measurement of Torque.	7 Marks
		(OR)	
4	a)	Explain the working of Eddy Current type Dynamometer and compare it with Motor Generator type Dynamometer.	7 Marks
	b)	Define Force. What are the most commonly used Spring Balances? Explain the working of Helical Spring Balance and compare it with other Spring Balances.	7 Marks

UNIT-III

5	a)	Define Absolute Pressure and Gauge Pressure. Compare various types of Manometers used for measurement of Static Pressure.	7 Marks
	b)	What is SPL? Describe with a neat block diagram, the working of a Sound Level Meter with reference to function and output of each block.	7 Marks
		(OR)	
6	a)	Explain with a neat sketch, the construction, principle and working of a Gauge which is most suitable for measurement of very low pressures.	7 Marks
	b)	Compare various types of Pressure Sensors used for measuring Moderate Pressure.	7 Marks

UNIT-IV

7	a)	What are the most conventional type of linear velocity transducers and explain the measurement of linear velocity using any Two such transducers.	7 Marks
	b)	How a variable reluctance transducer used for displacement measurement is adopted for acceleration measurement. Discuss with suitable diagrams.	7 Marks
		(OR)	
8	a)	Describe the working of Gyroscope.	7 Marks
	b)	With a neat diagram, explain the working of Potentiometric type Accelerometer.	7 Marks

UNIT-V

9	a)	Describe relative humidity can be determined by measuring Dew Point temperature.	6 Marks
	b)	Describe the importance of viscosity measurements in industrial processes. What do you understand by the terms (i) Dynamic viscosity and (ii) Kinematic viscosity? What is the relationship between them and what are their units?	8 Marks

(OR)

10	a)	Describe the construction and working of a Saybolt viscometer. What are the sources of error in it? Explain what correction is applied to compensate for the errors.	8 Marks
	b)	Define consistency. Explain Oscillating type consistency meter.	6 Marks

CODE No.:14BT51003 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

LINEAR AND DIGITAL IC APPLICATIONS

[Electrical and Electronics Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define the following: i) Slew Rate. ii) PSRR. iii) Thermal drift.	6 Marks
	b)	Operational amplifier has differential gain of 80 dB and CMRR of 100 dB. If $V_1 = 2\mu V$ and $V_2 = 1.6\mu V$, then calculate output voltages for differential and common-mode input signal operations.	8 Marks
		(OR)	
2	a)	List the characteristics of an ideal op-amp.	4 Marks
	b)	Explain in detail about the AC characteristics of an op-amp.	10 Marks

UNIT-II

3	a)	For a three op-amp realization of a current input instrumentation amplifier, derive the expression for V_o.	7 Marks
	b)	Briefly discuss comparator applications and explain non-inverting comparator with neat sketches.	7 Marks
		(OR)	
4	a)	Design a low pass filter at a cutoff frequency of 1KHz with a pass band gain of 2. Draw the circuit and plot its frequency response.	7 Marks
	b)	Explain the operation of AC amplifier.	7 Marks

UNIT-III

5	a)	Why successive approximation type of ADC is preferred? Explain its principle.	7 Marks
	b)	Draw and explain the basic block diagram of PLL.	7 Marks
		(OR)	
6	a)	Explain in detail about dual slop ADC.	7 Marks
	b)	Design an astable multivibrator using 555 timer for a frequency of 1KHz and a duty cycle of 70%. Assume $C = 0.1\mu F$.	7 Marks

UNIT-IV

7	a)	Explain how to estimate sinking current for low output and sourcing current for high output of CMOS gate.	8 Marks
	b)	Give the comparison of logic families.	6 Marks
		(OR)	
8		Explain in detail about CMOS dynamic electrical behavior.	14 Marks

UNIT-V

9	a)	Design a full adder using gate level modeling.	7 Marks
	b)	Explain various data types of Verilog HDL in detail.	7 Marks
		(OR)	
10	a)	Explain blocking and non-blocking statements with example.	7 Marks

b) Using two 8:1 MUX design and implement a 16:1 Multiplexer in Verilog HDL. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

COMPUTER NETWORKS

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Compare OSI Reference model with TCP/IP Reference model.	7 Marks
	b)	Draw and explain the frame format of 802.1.	7 Marks
		(OR)	
2		Differentiate between: i) Baseband co-axial cable and broad band coaxial cable. ii) Optical fibre and twisted pair. iii) LAN and MAN .	14 Marks

UNIT-II

3	a)	Describe the Go back **n** and selective repeat techniques.	7 Marks
	b)	The data is given as 1001000. Calculate the transmission data by using Hamming Code.	7 Marks
		(OR)	
4		Explain the following. i) Stop and wait ARQ. ii) CSMA Protocol.	14 Marks

UNIT-III

5	a)	Explain about congestion prevention policies.	7 Marks
	b)	Explain about IPv6 Header format.	7 Marks
		(OR)	
6	a)	Compare and contrast virtual-circuit and datagram subnet.	7 Marks
	b)	Specify the techniques used to achieve the good QOS.	7 Marks

UNIT-IV

7	a)	Describe the header format of a TCP protocol.	7 Marks
	b)	What technique is used process to process delivery? Explain it.	7 Marks
		(OR)	
8	a)	Draw and explain the TCP connection management finite state machine.	7 Marks
	b)	Write about the Service Primitives for Simple Transport Service.	7 Marks

UNIT-V

9	a)	What are the major components in E-mail system?	7 Marks
	b)	Explain about dynamic web document.	7 Marks
		(OR)	
10		What is Cryptography? Explain about various substitution techniques in Cryptography.	14 Marks

CODE No.:14BT51202 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

SOFTWARE ENGINEERING

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Distinguish between Personal Software Process (PSP) and Team Software Process (TSP) models.	7 Marks
	b)	Summarize the evolutionary development models and its problems in detail.	7 Marks
		(OR)	
2	a)	What are the principles that involved for modeling activity for software development?	7 Marks
	b)	What is the use and phases of unified process model in software development?	7 Marks

UNIT-II

3		Discuss various techniques of requirements discovery.	14 Marks
		(OR)	
4	a)	Describe any two object modeling approaches for software systems.	7 Marks
	b)	Draw a context model for a ATM system.	7 Marks

UNIT-III

5	a)	Explain the architectural design process.	7 Marks
	b)	Explain Re-engineering process model with a neat sketch.	7 Marks
		(OR)	
6	a)	Write the steps involved in interface design.	5 Marks
	b)	Assume that you have been asked to develop an online movie ticket booking system. Identify and explain briefly the user interface design issues involved with the given system.	9 Marks

UNIT-IV

7	a)	Explain different test strategies for object oriented software.	9 Marks
	b)	What is validation testing? Explain why it is important.	5 Marks
		(OR)	
8	a)	What are the various testing strategies for conventional software?	9 Marks
	b)	Differentiate between verification and validation.	5 Marks

UNIT-V

9	a)	Compare and contrast reactive and proactive risk strategies.	7 Marks
	b)	Briefly write about software reliability.	7 Marks
		(OR)	
10	a)	Write short notes on RMMM.	7 Marks
	b)	Define Quality and write about quality concepts.	7 Marks

CODE No.:14BT51501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

OPERATING SYSTEMS

[Computer Science and Engineering, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the services provided by the operating system?	9 Marks
	b)	Explain the process of handling a user application invoking the open() system call.	5 Marks
		(OR)	
2	a)	Explain priority scheduling with an example.	7 Marks
	b)	What is starvation? What is the solution to this problem?	7 Marks

UNIT-II

3	a)	Explain the Dining Philosophers problem.	7 Marks
	b)	Describe how the Swap () instruction can be used to provide mutual exclusion that satisfies the bounded-waiting requirement.	7 Marks
		(OR)	
4	a)	What is a deadlock? What are the necessary conditions to deadlock occur.	7 Marks
	b)	Explain Deadlock Recovery methods.	7 Marks

UNIT-III

5	a)	Explain the following page allocation algorithm with an example: i) First Fit. ii) Best Fit. iii) Next Fit.	7 Marks
	b)	Explain any two page replacement algorithms with example.	7 Marks
		(OR)	
6	a)	Explain about the allocation of frames using different algorithms.	7 Marks
	b)	Explain the concept of Thrashing with example.	7 Marks

UNIT-IV

7	a)	What is a directory describe the most common schemes for defining the logical structure of a directory.	7 Marks
	b)	Explain about the free space management using linked list.	7 Marks
		(OR)	
8		Explain the following Disk Scheduling algorithms with the same example i) FCFS. ii) SSTF. iii) SCAN. iv) C-SCAN. v) LOOK.	14 Marks

UNIT-V

9		Explain about Kernel I/O subsystem.	14 Marks
		(OR)	
10		Explain the principles of Protection and Domain of Protection.	14 Marks

CODE No.:14BT51502 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations November - 2018

SYSTEMS SOFTWARE

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain about system software and machine architecture.	7 Marks
	b)	List out registers used in SIC M/C architecture along with their use.	7 Marks
		(OR)	
2	a)	Write a program in both SIC and SIC/XE to copy a character string 'system software' to another character string.	7 Marks
	b)	Explain the simplified instructional computer programming examples.	7 Marks

UNIT-II

3	a)	Explain about symbol-defining statements.	7 Marks
	b)	Explain how could literals be implemented in a one-pass assembler.	7 Marks
		(OR)	
4		Explain multi-pass assembler operation with an example.	14 Marks

UNIT-III

5	a)	Enlist any four different loader option commands.	7 Marks
	b)	With source code, explain the working of bootstrap loader.	7 Marks
		(OR)	
6	a)	Define the following. i) Linking Loader. ii) Dynamic Linking.	7 Marks
	b)	Write an assembly language program for implementing an absolute loader.	7 Marks

UNIT-IV

7		Explain in detail about two-pass algorithm.	14 Marks
		(OR)	
8		Explain about conditional macro expansion.	14 Marks

UNIT-V

9		Discuss in detail on functions and capabilities of an interactive debugging system.	14 Marks
		(OR)	
10		Write short notes on: i) User interface. ii) Editing process.	14 Marks

CODE No.: 16BT3HS02 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

MANAGERIAL ECONOMICS AND PRINCIPLES OF ACCOUNTANCY

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit.
All questions carry equal marks

UNIT-I

1	Explain the scope and main objectives of Managerial Economics.	CO1	14 Marks
	(OR)		
2	Explain the Elasticity of Demand in detail and discuss its usefulness in Managerial Decision Making.	CO2	14 Marks

UNIT-II

3	Define Production Function and further explain the managerial usages of Production Functions.	CO1, CO2	14 Marks
	(OR)		
4	What do you understand by increasing returns to the scale? What are its causes?	CO2	14 Marks

UNIT-III

5	Critically examine the Price and Output determination under Monopoly in the short run and long run.	CO1, CO2	14 Marks
	(OR)		
6	Distinguish between Monopoly and Perfect Competition.	CO2	14 Marks

UNIT-IV

7	Define Accountancy? Explain its Concepts and Conventions.	CO1	14 Marks
	(OR)		
8	Write journal entries and prepare ledger accounts from the following transactions in the books of Imran for the year ending 2006:	CO4, CO5	14 Marks

Date	Transactions Particulars	Amount
1/6/2008	Started business with Cash	45000
1/6/2008	Paid into bank	25000
2/6/2008	Goods purchased for Cash	15000
3/6/2008	Purchase of Furniture & paid by cheque	5000
5/6/2008	Sold goods for Cash	8500
8/6/2008	Sold goods to Aravind	4000
10/6/2008	Goods purchased from Amrit	7000
12/6/2008	Withdrew cash from bank for personal use	10000
12/6/2008	Withdrew cash from bank for Business	400
30/6/2008	Paid for	
	Stationary	200
	Rent	1000
	Salaries to Staff	2500

UNIT-V

9	Define trading account? Explain the items of trading account in detail as per Proforma with their posting information.	CO1, CO2	14 Marks

(OR)

10	From the following balances prepare a Trading, Profit and Loss Account and Balance Sheet.	CO4, CO5	14 Marks

S.No	Particulars	Amount
1	Capital balance	35,000
2	Drawings	6,000
3	Furniture	2,600
4	Bank O.D	4,200
5	Sundry creditors	1,38,00
6	Business premises	24,000
7	Stock (1.1.2007)	20,000
8	Debtors	15,000
9	Rent from tenant's	1,000
10	Purchases	1,12,000
11	Tax & insurances	2,000
12	General Expenses	4,000
13	Salaries	12,000
14	Commission (Dr)	1,600
15	Carriage	2,000
16	Disount (Dr)	2,000
`7	Discount (Cr)	2,000
18	Bad debts	800
19	Sales Return	2,000
20	Sales	15,0000

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

MANAGEMENT SCIENCE

[Computer Science and Engineering, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What makes management an art or science? What are the advantages and limitations of the scientific technique?	CO1	7 Marks
	b)	What is the concept of social responsibility, how it is relevant for management?	CO5	7 Marks
		(OR)		
2	a)	Discuss environmental scanning. How important it is for the organization?	CO1	7 Marks
	b)	How does SWOT analysis help in planning various operations in management?	CO1	7 Marks

UNIT-II

3	a)	Discuss methods of production adopted in an industry.	CO5	7 Marks
	b)	Discuss control charts for attributes and variables and how to use them.	CO1	7 Marks
		(OR)		
4	a)	How, marketing and sales differ and what are the main functions of marketing?	CO1	5 Marks
	b)	Describe the importance of inventory management in an industry.	CO2	9 Marks

UNIT-III

5	a)	Discuss the role of the Human Resource Manager in an organization.	CO3	7 Marks
	b)	Discuss motivation theory developed by McGregor.	CO1	7 Marks
		(OR)		
6	a)	How do job description, job specification and a job evaluation differ?	CO1	7 Marks
	b)	What is an intrinsic and extrinsic motivation at work place?	CO5	7 Marks

UNIT-IV

7		Discuss the role of women entrepreneurs globally and the specific barriers they need to overcome in their start-ups in India.	CO4	14 Marks
		(OR)		
8		The data given below is about a project and its activities:	CO2	14 Marks

S.No.	1	2	3	4	5	6	7	8	9
Activity	1-2	1-3	2-4	3-4	4-6	5-6	3-5	5-7	6-7
Expected Time	6	8	7	12	3	5	7	11	10

i) Draw the project network.
ii) Mark the critical path.
iii) Find total project duration.

UNIT-V

9	a)	Discuss information technology tools available in managerial decisions.	CO5	7 Marks
	b)	Describe the concept of Total Quality Management and discuss bench marking, Six Sigma.	CO1	7 Marks
		(OR)		
10	a)	Discuss the importance of Just in Time inventory system (JIT). How it is beneficial to an organization?	CO4	7 Marks
	b)	List and describe types of maintenance strategies.	CO3	7 Marks

CODE No.: 16BT5HS02 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

COSTING AND FINANCE MANAGEMENT FOR CIVIL ENGINEERS

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 What is the purpose of Cost estimation? Elaborate different types of estimates. CO1 14 Marks

(OR)

2 Distinguish between approximate estimating and detailed estimating. CO2, CO4 14 Marks

UNIT-II

3 What is cost control? What are the different methods of calculating profit on incomplete contracts? Give illustration. CO1, CO3 14 Marks

(OR)

4 Alcon Construction Company Ltd. commenced its business of construction on 1-1-2016. The trial balance as on 31-12-2016 showed the following balances: CO4 14 Marks

Particulars	Dr. (Rs.)	Cr. (Rs.)
Paid up share capital	-	1,00,000
Cash received on account of contract (80% of work certified)	-	1,20,000
Land and Buildings	30,000	
Machinery at cost (75% at site)	40,000	
Bank	4,000	
Materials at site	40,000	
Direct labour	55,000	
Expenses at site	2,000	
Lorries and vehicles	30,000	
Furniture	1,000	
Office equipment	10,000	
Postage and telegrams	500	
Office expenses	2,000	
Rates and taxes	3,000	
Fuel and power	2,500	
Total	**2,20,000**	**2,20,000**

The contract price is Rs.3,00,000 and work certified is Rs.1,50,000.The work completed since certification is estimated at Rs.1,000 (at cost). Machinery costing Rs.2,000 was returned to stores at the end of the year. Stock of material at site on 31-12-2016 was of the value of Rs. 5,000. Wages outstanding were Rs. 200. Depreciation on machinery was at 10%. You are required to calculate the profit from the contract and show the work-in-progress will appear in the balance sheet as on 31-12-2016.

UNIT-III

5	How budgetary control does serves as a planning and control device? Point out its limitations.	CO1	14 Marks

(OR)

6	"A budget is an aid to management and not a substitute for management" .Comment.	CO2, CO3	14 Marks

UNIT-IV

7	Explain the meaning of the term 'Net cash flows' and 'Profit'. In what respect are these two different.	CO1, CO3	14 Marks

(OR)

8	A company is considering an investment proposal to install new milling controls. The project will cost Rs. 50,000/-. The facility has a life expectancy of 5 years and no salvage value. The Net Cash Inflow before depreciation and after tax (NCIF) are as follows:	CO3, CO4	14 Marks

Year	Net Cash in flows
1	10,000
2	11,000
3	14,000
4	15,000
5	25,000

Compute the Net Present Value and Profitability Index with 10% required rate of return.

UNIT-V

9	What is the concept of working capital cycle? Briefly explain the factors which determine the working capital needs of construction company.	CO1	14 Marks

(OR)

10	Explain the importance of trade credit and accruals as source of working capital. What is the cost of these sources?	CO1, CO3	14 Marks

CODE No.: 16BT30503 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

PYTHON PROGRAMMING

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit.
All questions carry equal marks

UNIT-I

1	a)	What is an algorithm? Write an algorithm to test given number is prime number or not.	CO1	7 Marks
	b)	What is a literal? Explain in detail about numeric and string literals with example.	CO1	7 Marks
		(OR)		
2	a)	What is an operator? Describe the various Arithmetic Operators in Python with an example.	CO1	7 Marks
	b)	Write Python program to convert temperature from Fahrenheit to Celsius.	CO3	7 Marks

UNIT-II

3	a)	What is a Control Structure? Write Multi-way Selection syntax and explain with an example.	CO1	10 Marks
	b)	Write a program segment that uses a while loop to add up all the even numbers between 100 and 200 inclusive.	CO2	4 Marks
		(OR)		
4	a)	Give a comparison between lists, tuples, dictionaries and sets.	CO1	8 Marks
	b)	Write a Python program that prompts the user for a list of integers and stores them in a list. For all values that are greater than 100, the string 'over' should be stored instead. The program should display the resulting list.	CO2	6 Marks

UNIT-III

5	a)	What Is a Function Routine? Write a Python function that prints all factors of a given number.	CO2	7 Marks
	b)	List various string methods used in Python.	CO1	7 Marks
		(OR)		
6	a)	What is difference between Iteration and Recursion? Write a program for Towers of Honoi using recursion.	CO3	7 Marks
	b)	Describe various string methods in Python with example.	CO1	7 Marks

UNIT-IV

7	a)	Explain the fundamental features of turtle graphics.	CO1	8 Marks
	b)	Give a set of instructions for controlling the turtle to create three concentric circles, each of different color and line width.	CO4	6 Marks
		(OR)		
8	a)	What is Object-Oriented Programming? Describe the features of Object Oriented Programming.	CO1	7 Marks
	b)	Write a Python program that overloads + operator, to add two objects of a class.	CO5	7 Marks

UNIT-V

9	a)	Describe about tkinter pragmatics.	CO1	7 Marks
	b)	Explain about Adding Multiple Widgets with an example.	CO5	7 Marks
		(OR)		
10	a)	Discuss about Bound Method Callback Handlers with an example.	CO5	7 Marks
	b)	Explain about Extending class components with an example.	CO5	7 Marks

CODE No.: 16BT40406 SVEC-16 (RA)

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

PULSE AND DIGITAL CIRCUITS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss the response of RC integrator circuit for a pulse input and sketch the waveforms.	CO1	8 Marks
	b)	Determine the upper 3-dB frequency for low pass RC circuit, if a pulse of 0.4μs is required to pass without distortion. Find the value of resistance if the capacitor is 0.001μF.	CO4	6 Marks
		(OR)		
2	a)	Discuss the operation of a RC low-pass circuit when it is excited by a sinusoidal signal.	CO1	7 Marks
	b)	Determine upper 3-dB and lower 3-dB frequencies for 1KHz square wave output from an amplifier with Rise time t_r = 250ns and tilt = 10%.	CO4	7 Marks

UNIT-II

3	a)	In a clamping circuit for symmetrical square wave, asses the parameters of ratio of area in forward direction to area in reverse direction in terms of forward resistance R_f to reverse resistance R_r .	CO6	8 Marks
	b)	Explain the operation of a biased negative clamper with neat sketch.	CO1	6 Marks
		(OR)		
4	a)	Considering a practical clamping circuit, asses the generation of spikes with tilt in the forward and in the reverse directions.	CO6	6 Marks
	b)	Discuss in detail about Diode Comparator with neat sketches.	CO1	8 Marks

UNIT-III

5	a)	Design a free running multivibrator to generate a square wave of amplitude 10V and frequency 1KHz with 70% duty cycle.	CO3	7 Marks
	b)	Apply appropriate triggering technique to a collector coupled bi-stable multivibrator.	CO5	7 Marks
		(OR)		
6	a)	Apply appropriate multivibrator circuit to convert voltage into time using two transistors.	CO5	8 Marks
	b)	Design a Collector-Coupled astable multivibrator with frequency 1KHz, h_{FE} = 50, $1_{C(sat)}$ = 5mA, $V_{CE(sat)}$ = 0.2, V_{cc}= 12V. Assume $R_1 = R_2$, $C_1 = C_2$.	CO3	6 Marks

UNIT-IV

7	a)	Explain the basic principles of Bootstrap Time-base generator.	CO1	6 Marks
	b)	Explain the principle and working of a Transistor Current Time-base generator.	CO1	8 Marks
		(OR)		
8	a)	Explain the basic principles of Miller Time-base generator.	CO1	7 Marks
	b)	Derive the expression for frequency of oscillations of UJT sweep circuit.	CO2	7 Marks

UNIT-V

9	a)	What is sampling gate? Explain how it differs from logic gates.	CO2	7 Marks
	b)	Write the advantages and disadvantages of Emitter Coupled Logic.	CO1	7 Marks
		(OR)		
10	a)	What do you mean by pedestal? How pedestal can be reduced in sampling gate.	CO2	6 Marks
	b)	Draw and explain the circuit of two-input TTL NAND gate.	CO1	8 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

DATABASE MANAGEMENT SYSTEMS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit.
All questions carry equal marks

UNIT-I

1	a)	Describe different types of database models. Compare and contrast their features.	CO1	7 Marks
	b)	What are various steps in the database design process? Explain.	CO1	7 Marks
		(OR)		
2	a)	Define database. Discuss various types of database users and user interfaces.	CO2	6 Marks
	b)	Explain: i) Entity *Vs* Attribute. ii) Entity *Vs* Relationship by demonstrating with examples.	CO2	8 Marks

UNIT-II

3	a)	Define the following. i) Relation. ii) Relation schema. iii) Relation instance. iv) Arity of a relation. v) Domain constraint. vi) Relational database. vii) Relational database schema.	CO2	7 Marks
	b)	What is a view? How views support logical independence and used for security?	CO3	7 Marks
		(OR)		
4	a)	Write short notes on Domain Relational Calculus.	CO1	7 Marks
	b)	Explain briefly about Relational algebra and discuss various set operations.	CO3	7 Marks

UNIT-III

5	a)	What aggregate operators does SQL support? Explain with examples.	CO1	8 Marks
	b)	What are null values? How do they affect the meaning of queries?	CO1	6 Marks
		(OR)		
6	a)	What is decomposition? Explain the problems related to decomposition.	CO1	7 Marks
	b)	Discuss about Multivalued Dependiences with example.	CO2	7 Marks

UNIT-IV

7	a)	Discuss the various states that a transaction goes through execution with the help of a neat state diagram.	CO1	7 Marks
	b)	What is Serializability? Discuss about View Serializability.	CO4	7 Marks
		(OR)		
8	a)	Explain Two-Phase locking techniques for concurrency control.	CO4	7 Marks
	b)	Discuss about Multiple Granularity locking.	CO4	7 Marks

UNIT-V

9		Explain about file organization and indexing in DBMS.	CO1	14 Marks
		(OR)		
10	a)	How is data organized in a tree-based index? When would we use a tree-based index?	CO5	7 Marks
	b)	Explain the structure and characteristics of a B+ tree.	CO1	7 Marks

CODE No.: 16BT41204 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

THEORY OF COMPUTATION

[Computer Science and Engineering]

Max. Marks: 70

Time: 3 hours

Answer One Question from each Unit.
All questions carry equal marks

UNIT-I

1 a) Differentiate Mealy machine and Moore machine with an example. CO2 7 Marks

b) Design DFA to accept the language L where L = {w/w has both an even number of 0's and even number of 1's}. CO3 7 Marks

(OR)

2 a) Design $\in$ – NFA for the language "the set of strings consisting zero or more a's followed by zero or more b's followed by zero or more c's". Try to use $\in$ – transitions to simplify your design. CO3 7 Marks

b) Convert the following Moore machine to an equivalent Mealy machine. CO3 7 Marks

Present state	Next state I/P=0	Next state I/P=1	O/P
$\rightarrow q_0$	q_2	q_1	0
q_1	q_0	q_3	1
q_2	q_3	q_4	1
q_3	q_4	q_1	0
q_4	q_4	q_3	1

UNIT-II

3 a) Explain briefly the closure properties of regular languages. CO1 7 Marks

b) Construct minimum state automaton to the following automaton given by the transition table CO3 7 Marks

δ	0	1
$\rightarrow q_1$	q_2	q_6
q_2	q_1	q_3
$* q_3$	q_2	q_4
q_4	q_4	q_2
q_5	q_4	q_5
$* q_6$	q_5	q_4

(OR)

4 a) Construct a finite automaton equivalent to the following regular expression r = 01 [(110)* + (111)* + 0]*1. CO3 7 Marks

b) Prove that the language $\{0^n1^{2n}/n \geq 1\}$ is not a regular language. CO5 7 Marks

UNIT-III

5 a) Define Ambiguity of a grammar. Test whether the grammar $S \rightarrow a/Sa/bSS/SSb/SbS$ is ambiguous or not. CO1 7 Marks

b) Design a context free grammar for the language $L = \{a^i b^j c^k / i = j + k\}$. CO3 7 Marks

(OR)

6 Let G be the grammar $S \rightarrow 0B \mid 1A$, $A \rightarrow 0|0S|1AA$, $B \rightarrow 1|1S|0BB$. For the string '00110101', Find: CO1 14 Marks

i) Left most derivation.
ii) Right most derivation.
iii) Derivation tree.

UNIT-IV

7	a)	Construct a PDA that accepts the language $\mathbf{L = \{WCW^T / W \in \{a,b\}^*\}}$.	CO3	7 Marks
	b)	Give deterministic pushdown automata to accept the language $\{0^n1^m0^n / n$ and m are arbitrary$\}$.	CO3	7 Marks

(OR)

8		Convert the *PDA* given by $\boldsymbol{P = (\{p, q\}, \{0, 1\}, \{X, Z_0\}, \delta, q, Z_0)}$ to a *CFG* if δ is given by $\boldsymbol{\delta(q, 1, Z_0) = \{(q, XZ_0)\}}$, $\boldsymbol{\delta(q, 1, X) = \{(q, XX)\}}$, $\boldsymbol{\delta(q, 0, X) = \{(p, X)\}}$, $\boldsymbol{\delta(q, \in, X) = \{(q, \in)\}}$, $\boldsymbol{\delta(p, 1, X) = \{(p, \in)\}}$, $\boldsymbol{\delta(p, 0, Z_0)=\{(q, Z_0)\}}$.	CO3	14 Marks

UNIT-V

9		Design a Turing machine for the language $\boldsymbol{L = \{a^n b^{2n} / n \geq 1\}}$.	CO3	14 Marks

(OR)

10	a)	Explain the basic Turing machine model and explain in one move. What are the actions take place in TM?	CO1	7 Marks
	b)	Draw the Turing machine that computes the function $\boldsymbol{f(a, b) = a + b}$.	CO4	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

IRRIGATION ENGINEERING

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit.
All questions carry equal marks

UNIT-I

1	a)	Discuss in brief various water application methods with neat sketches.	CO1	7 Marks
	b)	Determine the field capacity of soil for the following data. Depth of root zone = 1.80m Existing moisture = 8% Dry density of soil = 1450 kg/m^3 Quantity of water applied to soil = 650 m^3 Water lost due to deep percolation and Evaporation = 10% Plot area =1000m^2	CO4	7 Marks

(OR)

2	a)	Briefly explain the standards of irrigation water.	CO1	7 Marks
	b)	Explain the terms duty and delta. Derive the relationship between Duty, Delta and Base period.	CO1	7 Marks

UNIT-II

3	a)	Write a brief note on Bligh's creep theory.	CO1	7 Marks
	b)	Explain the causes and failure of weirs and their remedial measures.	CO1	7 Marks

(OR)

4	a)	Explain the functions of silt excluder with a neat sketch.	CO3	7 Marks
	b)	Explain the design principles of vertical drop weir.	CO3	7 Marks

UNIT-III

5	a)	What are the various forces acting on gravity dam and explain in detail.	CO2	7 Marks
	b)	Derive an expression for the limiting height of low and high gravity dams.	CO2	7 Marks

(OR)

6	a)	Explain the causes of failure of earth dams and their remedial measures.	CO2	7 Marks
	b)	Explain the criteria for safe design of an earth dam.	CO3	7 Marks

UNIT-IV

7	a)	What is canal lining and explain the various types of lining with neat sketches.	CO2	7 Marks
	b)	What are the canal regulation works and explain the functions of each.	CO2	7 Marks

(OR)

8	a)	Explain the design principles of Sarada type fall.	CO3	7 Marks
	b)	Using Kennedy's theory, design an irrigation canal for a discharge of 5 cumecs, assume N= 0.0225, m= 1.0 and B/D = 3.24. Also find the bed slope of the channel.	CO6	7 Marks

UNIT-V

9	a)	Explain the aqueduct and super passage.	CO1	7 Marks
	b)	Explain the various types of River training works with neat sketches.	CO2	7 Marks
		(OR)		
10	a)	Discuss in brief the design principles of type III aqueduct.	CO3	7 Marks
	b)	List out the factors to be considered in the selection of suitable type of cross drainage work.	CO5	7 Marks

CODE No.: 16BT50102 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

REINFORCED CEMENT CONCRETE STRUCTURES

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit.
All questions carry equal marks

UNIT-I

1		Design a rectangular beam for 4.0m effective span of simply supported beam which is subjected to a dead load of 20KN/m and a live load of 15KN/m. The cross section of beam is 230mm x 450mm effective depth. Use M25 and Fe415 grades of concrete and steel. Use Limit State Method.	CO3	14 Marks
		(OR)		
2	a)	Establish the equations for determining the depth of neutral axis, moment of resistance and area of tension steel of singly reinforced rectangular beam by using working stress method.	CO1	7 Marks
	b)	Find the moment of resistance of a beam for a cross section of 230mm x 400mm effective depth that is reinforced with 3# 20 Ømm bars in tension zone. And also find the safe UDL on a ***cantilever*** beam of span 3.0m. Use M20 and Fe415 grades of concrete and steel. Use WSM.	CO2	7 Marks

UNIT-II

3	a)	Write about types of Shears and Shear failures in the design of RC structures.	CO1	4 Marks
	b)	A reinforced concrete beam 230mm wide and 400mm deep is reinforced with 4 No's of 25mm diameter HYSD bars. Two bars are bent up at 45^0 over supports. Design the shear reinforcement in the beam if it is subjected to a maximum shear force of 120KN at supports. Assume M25 grade concrete.	CO2	10 Marks
		(OR)		
4	a)	A doubly reinforced concrete beam of size 230mm x 400mm effective depth requires $820mm^2$ area as tension reinforcement and $350mm^2$ area as compression reinforcement. It is reinforced with 2no. 16mm diameter bars in compression at $d' = 40mm$ and 3 no. 20mm diameter bars in tension. Calculate the development length of bars. The materials are M20 concrete at Fe415 grade steel.	CO3	10 Marks
	b)	Explain the term bond and development length.	CO3	4 Marks

UNIT-III

5	a)	Write the differences between one way slab and two way slabs.	CO4	4 Marks
	b)	Design a simply supported R.C.C slab for an office floor having clear dimensions of 4m x 10m with 230mm walls all round. Adopt M20 grade concrete and Fe415 grade steel.	CO3	10 Marks
		(OR)		
6		A three span continuous one-way slab is to be used as an office floor. The centre to centre distance of supporting beams is 4.0m. Consider live load $3KN/m^2$ and floor finish $1.0KN/m^2$ Design the slab using M20 and Fe500 grades.	CO3	14 Marks

UNIT-IV

7	a)	Write about classification of columns with neat sketches.	CO1	4 Marks
	b)	A short braced column of size 230mm x 300mm is reinforce with 6 no's 16mm diameter bars. Determine the safe load on column. The materials are M20 grade concrete and mild steel reinforcement.	CO2	10 Marks

(OR)

8	a)	Briefly explain the column reinforcement is negative as a designer, in which way you can provide reinforcement in the column according to IS456-2000.	CO7	4 Marks
	b)	Design a helical reinforced short circular column to carry an axial load of1200 KN. Use M20 and Fe415 grades.	CO3	10 Marks

UNIT-V

9		Design a suitable footing for a column of size 300mm x 450mm; reinforced with 6 # 20mm bars, carrying an axial load of 1200KN. Safe bearing capacity of soil is 150KN/m^2 .Adopt M25 and Fe415 grades. And also draw the reinforcement details.	CO3	14 Marks

(OR)

10		Design a suitable staircase in a hall of size 2.5m x 5.0m and height of floor is 3.0m. Adopt rise and tread of each step as 150mm and 270mm respectively. Live load may be taken as 4KN/m^2. Use M20 and Fe415 grades. The landing slab is supported on sides on 230mm thick walls.	CO3	14 Marks

CODE No.: 16BT50103 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

SOIL MECHANICS

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit.
All questions carry equal marks

UNIT-I

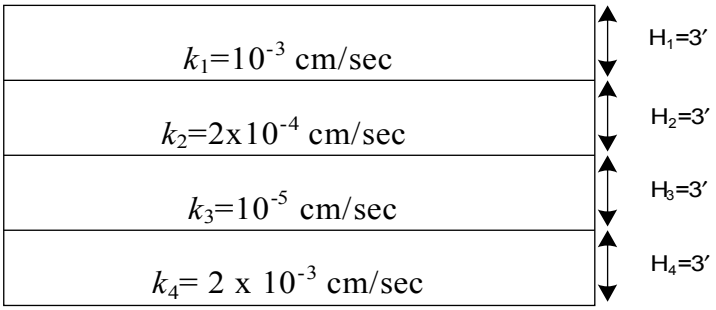
1	a)	Derive the relationship between dry unit weight, saturated unit weight and natural moisture content.	CO2	6 Marks
	b)	A saturated soil sample has a unit weight of 18.5kN/m^3 and Gs = 2.70. Find γdry, e, η and w.	CO2	8 Marks

(OR)

2	a)	Define the terms Plasticity Index, Sensitivity, Thixotrophy and Activity of soil.	CO4	8 Marks
	b)	Prove that $\mathbf{e_{min}} = 0.35$.	CO4	6 Marks

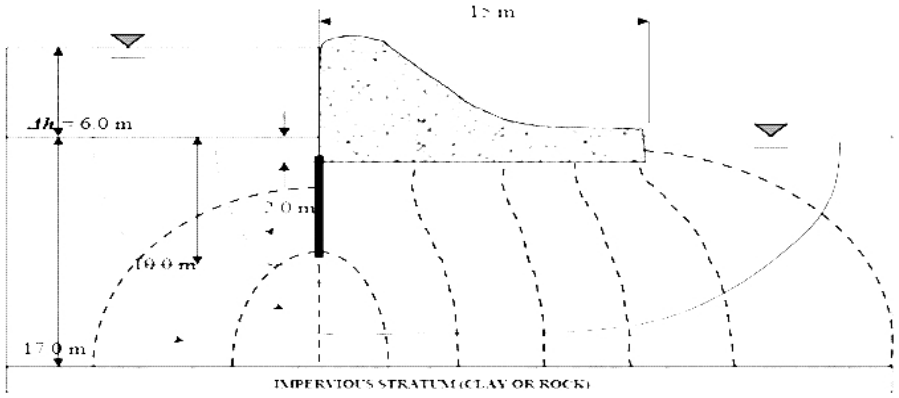
UNIT-II

3	a)	What is Darcy's law? Explain the factors influencing the coefficient of permeability.	CO2	6 Marks
	b)	Estimate the ratio of horizontal to vertical permeability of these four strata.	CO2	8 Marks



(OR)

4	a)	Describe the terms. i) Effective stress. ii) Quick sand conditions.	CO1	7 Marks
	b)	The completed flow net for the dam shown below includes a sheet pile cutoff wall located at the head water side in order to reduce the seepage loss. The dam is half a kilometer in width (shore to shore) and the permeability of the silty sand stratum is 3.5 x 10^{-4}cm/s. Find the total seepage loss in liters per year	CO4	7 Marks



UNIT-III

5	a)	For a sedimentary soil deposit, which solution is more appropriate – Boussinesq or Westergaard? Why? State assumptions involved in the Westergaard's theory.	CO2	6 Marks
	b)	An annular ring footing of external and internal radii of 8m and 4m respectively transmits a pressure of 100kN/m^2. Compute the vertical stresses at depths 0.5m, 1m, 2m and 4m below the centre. Draw the stress distribution curve with depth.	CO8	8 Marks

(OR)

6	a)	Write short notes on effect of compaction on soil properties.	CO2	6 Marks
	b)	Following are the results for standard procter test.	CO8	8 Marks

Moisture content (%)	13.90	18.80	19.40	22.80	23.40
Wet of weight soil in mould (gm)	1663	1779	1851	1893	1898

Take volume of mould = 945cc; Empty weight of the mould = 125gm. Plot the following.

i) Moisture-dry density curve. ii) zero air void curve.

UNIT-IV

7	a)	List the assumptions made in deriving Terzaghi's one dimensional consolidation theory.	CO1	6 Marks
	b)	A normally consolidated clay stratum of 3m thickness has two permeable layers at its top and bottom. The liquid limit and the initial voids ratio of the clay are 36.5 and 0.82 respectively while the initial overburden pressure at the middle of clay layer is 2 kg/cm^2. Due to the construction of a new building this pressure increases by 1.5 kg/gm cm^2. Compute the probable consolidation settlement of the building.	CO8	8 Marks

(OR)

8	a)	How do you understand by the terms. i) Immediate settlement. ii) Primary consolidation settlement. iii) Secondary consolidation settlement.	CO2	6 Marks
	b)	A clay soil, tested in a consolidometer, showed a decrease in void ratio from 1.20 to 1.10 when the pressure was increased from 0.25 to 0.50kgf/cm^2. Calculate the coefficient of compressibility (a_v), coefficient of volume compressibility (m_v). If the coefficient of consolidation (C_v) determined in the test for the given stress increment was 10m^2 / year, calculate the coefficient of permeability (k) in cm/s. If the sample tested at the site was taken from a clay layer 3.0m in thickness, determine the consolidation settlement resulting from the given stress increment.	CO8	8 Marks

UNIT-V

9	a)	Explain the procedure to find the shear stress parameter for sandy soil using direct shear stress.	CO2	6 Marks
	b)	An unconfined compression test was conducted on an undisturbed sample of clay. The sample had a diameter of 37.5mm and was 80mm long. The load at failure measured by the proving ring was 28N and the axial deformation of the sample at failure was 13mm. Determine the unconfined compressive strength and undrained shear strength of the clay.	CO8	8 Marks

(OR)

10	a)	What is the significance of pore pressure coefficients?	CO2	6 Marks
	b)	Explain the basic difference between direct shear stress and tri-axial stress.	CO2	8 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

STRUCTURAL ANALYSIS –II

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit.
All questions carry equal marks

UNIT-I

1	a)	Derive the expression for maximum bending moment and shear force for a simply supported beam with a single concentrated load "W" moving from left to right.	CO1	6 Marks
	b)	In a simply supported beam AB of span 25m, determine the maximum bending moment and maximum shear force at a section 5m from A, due to the passage of uniformly distributed load of intensity 25kN/m, longer than the span.	CO2	8 Marks

(OR)

2		A simply supported beam has a span of 20m. A uniformly distributed load of 60kN/m and 5m long crosses the span. Using influence lines, find the maximum bending moment and shear force produced at the point 10m from the left support.	CO2	14 Marks

UNIT-II

3		Analyse the two-span continuous beam shown in figure 01 by slope deflection method and draw the bending moment and shear force diagrams. Assume EI is constant throughout.	CO6	14 Marks

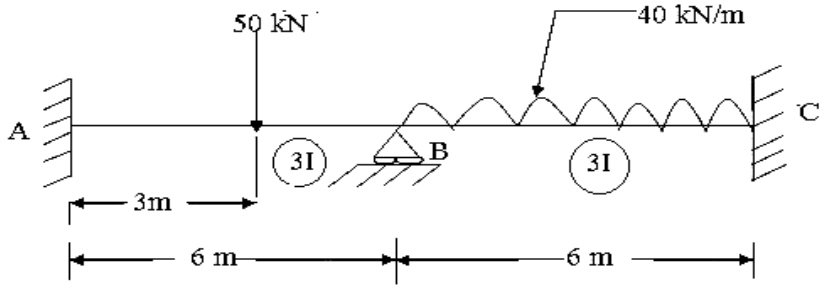

Figure 01

(OR)

4		Analyse the continuous beam shown in figure 02 by using moment distribution method and draw the bending moment diagram.	CO6	14 Marks

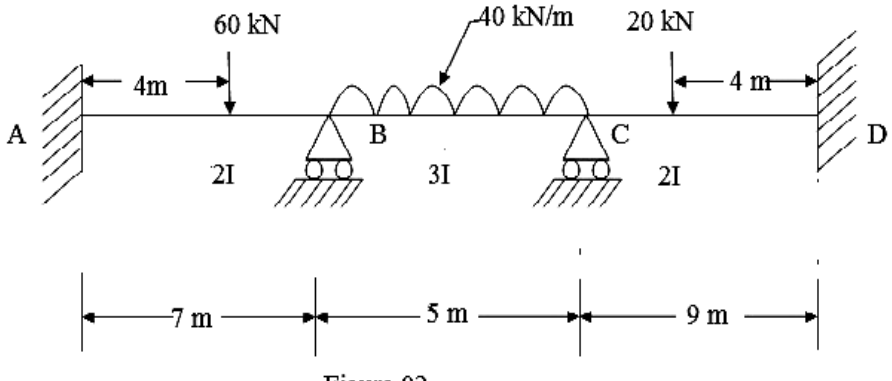

Figure 02

UNIT-III

5 Analyse the continuous beam shown in figure 03 by kani's method. CO4 14 Marks

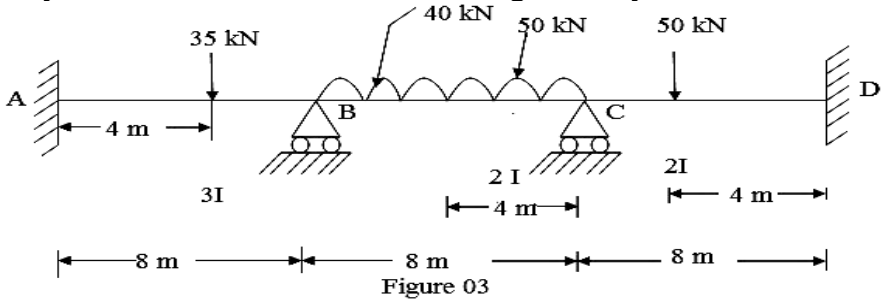

Figure 03

(OR)

6 a) Derive the expression for strain energy due to axial load. CO1 7 Marks

b) Using strain energy method, determine the deflection of the free end of a cantilever of length 'L' subjected to a concentrated load 'P' at the free end. CO2 7 Marks

UNIT-IV

7 Explain with an example the following. CO5 14 Marks

i) Determine and indeterminate structures.
ii) Static indeterminacy.
iii) Kinematic indeterminacy.

(OR)

8 Find the forces in all the members of the pin-jointed frame work as shown figure 04. All the members have the same area of cross section and Young's modulus. CO2 14 Marks

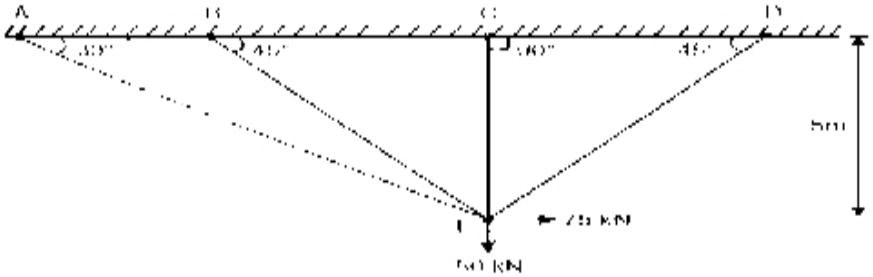
Figure 04

UNIT-V

9 a) Define plastic hinge and plastic moment capacity. CO1 7 Marks

b) Determine the collapse load of a fixed beam shown in figure 05. CO3 7 Marks

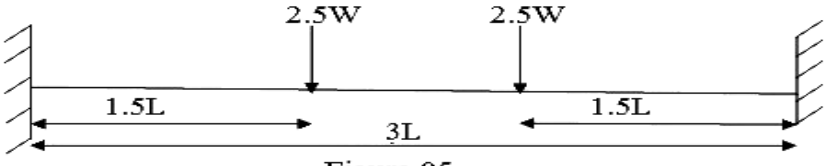

Figure 05

(OR)

10 Calculate the plastic moment capacity required for the continuous beam with working loads shown in figure 06. CO3 14 Marks

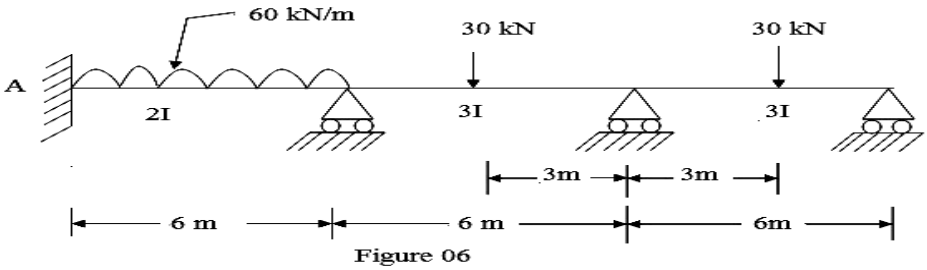

Figure 06

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III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

WASTEWATER TECHNOLOGY

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss briefly the necessity of replacing the conservancy system by the water carriage system.	CO1	7 Marks
	b)	What are the systems of plumbing? With the help of a neat sketch, discuss various systems of plumbing used for drainage.	CO2	7 Marks
		(OR)		
2	a)	What do you understand by "time of concentration"? What is its importance in determination of storm flow? How it is calculated?	CO1	7 Marks
	b)	How quantity of storm sewage is determined by Rational Method? Discuss in detail.	CO2	7 Marks

UNIT-II

3	a)	Design a screen channel for a peak sewage flow of 45 MLD by using following data. i) Size of bars is 15 mm x 50mm. ii) Dia of incoming sewer is 0.65m.	CO3	7 Marks
	b)	List out chemical characteristics of sewage and explain any three how importance in maintain the standard for disposal.	CO1	7 Marks
		(OR)		
4	a)	Sketch a conventional sequence of various unit operations in a complete municipal sewage treatment plant.	CO2	7 Marks
	b)	What is oxygen sag Curve in stream pollution?	CO1	7 Marks

UNIT-III

5	a)	Describe in detail about an oxidation ditch.	CO2	7 Marks
	b)	Design a standard trickling filter plant to treat 6 million liters of sewage per day having 5 days of BOD of 160mg/l. Assume suitable data where ever required.	CO3	7 Marks
		(OR)		
6	a)	Write the procedure for design of activated sludge tank.	CO3	7 Marks
	b)	Differentiate high rate trickling filters and high rate trickling filters.	CO2	7 Marks

UNIT-IV

7	a)	Explain the characteristics and types of sludge.	CO1	7 Marks
	b)	Sludge disposal to an onsite create lot of problems to the community. What are the steps you suggest for the disposal and what is the mechanism involved in the process of removal of pathogenic bacteria from sludge.	CO6	7 Marks
		(OR)		
8	a)	Mention the various physical chemical processes used for the removal of nitrogen from sewage. Briefly describe each method.	CO3	7 Marks
	b)	Explain the process of removal of phosphorous and refractory organic materials.	CO2	7 Marks

UNIT-V

9	a)	Classify the various methods of sewage disposal in water bodies.	CO2	7 Marks
	b)	Derive Streeter-Phelps equation for oxygen sag analysis.	CO3	7 Marks

(OR)

10	a)	Discuss various methods of disposal of septic tank effluent with neat sketches.	CO2	7 Marks
	b)	Design a septic tank with dispersion trench for 180 users. The rate of water supply is 75 LPCD. Assume suitable criteria as applicable. Draw a neat sketch of the unit.	CO3	7 Marks

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III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

CONTROL SYSTEMS

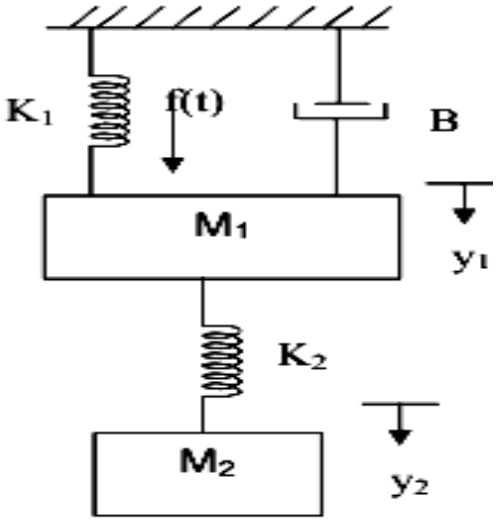
[Electrical and Electronics Engineering, Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

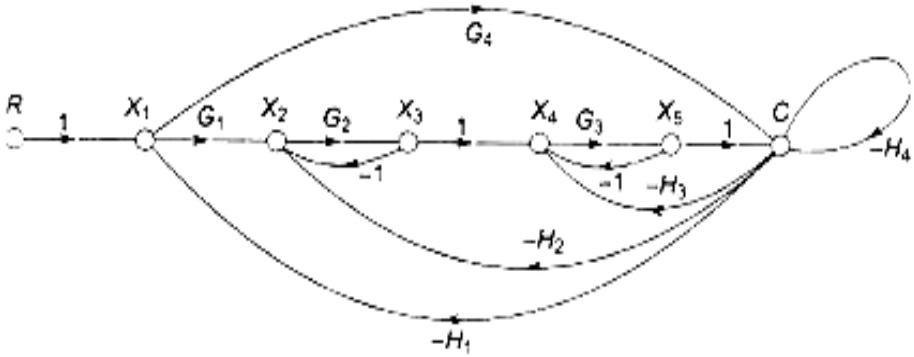
UNIT-I

1 Write the differential equations governing the behavior of mechanical system shown in figure below and obtain $Y_2(s)/F(s)$. Also obtain an analogous electrical circuit based on force – current analogy. CO4 14 Marks



(OR)

2 a) For the given signal flow graph below, obtain C(s)/R(s) . CO4 8 Marks



b) Derive an expression for the transfer function of field control DC servo motor. CO4 6 Marks

UNIT-II

3 a) What is the effect of addition of poles and zeros to the forward path transfer function. CO1 6 Marks

b) Test the stability of the system with the following characteristic equation by Routh's test $S^6 + 2S^5 + 8S^4 + 20S^2 + 16S + 16 = 0$. CO4 8 Marks

(OR)

4 Derive the expressions for Rise time, Peak time, Peak overshoot and Settling time for standard second order system. CO2 14 Marks

UNIT-III

5	a)	Explain the frequency domain specifications of a second order system.	CO1	7 Marks
	b)	Derive the correlation between time domain and frequency domain specifications.	CO2	7 Marks

(OR)

6		Sketch the Nyquist plot for a system with the open loop transfer function . Determine the range of values of K for which the system is stable.	CO5	14 Marks

UNIT-IV

7		Design a lead compensator for the system $G(s) = 1/s(s + 2)$ with damping coefficient equal to 0.45, velocity error constant **>20** and small settling time.	CO3	14 Marks

(OR)

8		With suitable block diagrams and equations, explain the following types of controllers employed in control systems: i) Proportional controller. ii) Proportional plus integral controller. iii) PID controller.	CO2	14 Marks

UNIT-V

9	a)	State and prove the properties of STM.	CO1	6 Marks
	b)	Given the system $\dot{x} = \begin{bmatrix} 0 & 0 & -20 \\ 1 & 0 & -24 \\ 0 & 1 & -9 \end{bmatrix} x + \begin{bmatrix} 3 \\ 1 \\ 0 \end{bmatrix} u, y = \begin{bmatrix} 0 & 0 & 1 \end{bmatrix} x$, find out its characteristic equation.	CO4	8 Marks

(OR)

10	a)	Derive the derivation for State Transition Matrix.	CO2	4 Marks
	b)	The state equations of the linear time invariant system are given by $\begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \end{bmatrix} = \begin{bmatrix} -2 & 0 \\ 1 & -1 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} + \begin{bmatrix} 0 \\ 1 \end{bmatrix} u; y = \begin{bmatrix} 1 & 0 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix}$ i) Determine STM. ii) Find the solution for y(t) . iii) If a unit step is given to the input, what will be the behavior of the output.	CO4	10 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

POWER ELECTRONICS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit.
All questions carry equal marks

UNIT-I

1	a)	Explain static V-I characteristics of SCR.	CO1	7 Marks
	b)	Compare the characteristics of power BJT and power MOSFET.	CO1	7 Marks
		(OR)		
2	a)	List and explain various voltage ratings of SCR.	CO1	7 Marks
	b)	Calculate the number of SCRs each rated 500V, 75A required in each branch of a series and parallel combination for a circuit with the total voltage and current rating of 10kV and 1000A. Assume derating factor of 10%.	CO4	7 Marks

UNIT-II

3	a)	Describe the operation of 1-Ø fully controlled bridge rectifier with R-L load under continuous conduction with relevant waveforms.	CO2	7 Marks
	b)	Explain the effect of freewheeling diode on the performance of line commutated converter.	CO2	7 Marks
		(OR)		
4	a)	Compare the performance of fully controlled converter and semi converter.	CO3	7 Marks
	b)	A single phase semi converter is operated from 150V, 50Hz ac supply. The load resistance is 10Ω. If the average output voltage is 30% of maximum possible average output voltage, determine firing angle and average output current.	CO4	7 Marks

UNIT-III

5	a)	Describe the operation of 1-Ø dual converter under circulating current mode of operation with relevant waveforms.	CO2	7 Marks
	b)	Explain the operation of 1-Ø mid point step down cyclo converter with R load.	CO2	7 Marks
		(OR)		
6	a)	Describe the operation of suitable circuit for speed control of fan and pump drives.	CO6	7 Marks
	b)	Mention few industrial applications of dual converter.	CO5	7 Marks

UNIT-IV

7	a)	Explain the operation of step down chopper. Derive the expression for average output voltage.	CO2	7 Marks
	b)	Explain the need of forced commutation for turning off SCR.	CO1	7 Marks
		(OR)		
8		Describe the operation of Morgan's chopper in detail.	CO2	14 Marks

UNIT-V

9	a)	Explain how voltage control is achieved by sinusoidal pulse width modulation.	CO2	7 Marks
	b)	Compare voltage source inverter and current source inverter.	CO2	7 Marks

(OR)

10		Explain the operation of three phase inverter under 180º conduction mode of operation with star connected load. Draw the waveforms of phase voltages and line voltages.	CO2	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

SYNCHRONOUS MACHINES

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the essential difference between cylindrical and salient pole rotors used in large alternator.	CO1	6 Marks
	b)	The stator of a 3 phase 20 pole alternator has 120 slots and there are 4 conductors per slot accommodated in two layers. If the speed of the alternator is 300r.p.m, calculate the induced **emf** per phase. Resultant flux in the air gap is 0.05 Weber per pole. Assume the coil span as 150^0 electrical.	CO4	8 Marks

(OR)

2	a)	Derive the expressions for distribution factor and coil pitch factor.	CO1	7 Marks
	b)	Explain the phenomenon of armature reaction when an alternator is delivering a load current at; i) purely lagging pf. ii) unity pf. iii) purely leading pf.	CO4	7 Marks

UNIT-II

3	a)	Explain the synchronous impedance method of determining the voltage regulation of an alternator. Comment on the merits and limitations of this method, why this method is considered as pessimistic method.	CO1	7 Marks
	b)	A 3 phase star connected synchronous generator is rated at 1.5MVA, 11KV. The armature effective resistance and synchronous reactance are 1.2Ω and 25Ω respectively per phase. Calculate the percentage voltage regulation for a load of 1.4375 MVA at; i) 0.8 power factor lagging. ii) 0.8 power factor leading.	CO4	7 Marks

(OR)

4	a)	Explain the ampere-turn method for determination of voltage regulation of an alternator.	CO1	6 Marks
	b)	A 3 phase star connected 1000KVA , 2000V , 50Hz alternator gave the following open circuit and short circuit test reading	CO4	8 Marks

Field Current	A	10	20	25	30	40	50
OC Voltage	V	800	1500	1760	2000	2350	2600
SC armature current	A		200	250	300		

The armature effective resistance per phase is 0.2Ω draw the characteristics curves and determine the full load percentage voltage regulation at;

i) 0.8 power factor lagging.
ii) 0.8 power factor leading.

Use EMF method for the determination of voltage regulation of an alternator.

UNIT-III

5	a)	Mention the need for parallel operation of alternators. State the conditions to be satisfied before connecting an alternator to the infinite bus bars.	CO1	6 Marks
	b)	Two alternators working parallel supplying the following loads. i) lighting load of 500KW. ii) 1000 KW at 0.9 power factor lagging. iii) 500 KW at 0.9 power factor leading. iv) 800 KW at 0.8 power factor lagging. One machine is supplying 1500KW at 0.95 power factor lagging. Calculate the load on the other machine.	CO2	8 Marks

(OR)

6		Two alternators are connected in parallel and sharing a load in desired proportion. Explain what will happen if, i) the excitation of alternators are changed while their prime mover inputs are fixed. ii) the prime mover inputs are changed while their excitations are constant.	CO1	14 Marks

UNIT-IV

7	a)	Why a synchronous motor is not self starting and mentions the methods for starting of synchronous motor.	CO1	7 Marks
	b)	Explain when a synchronous motor operates as synchronous condenser and explain the importance of synchronous condenser.	CO6	7 Marks

(OR)

8	a)	Explain the concept of V and Inverted V curves in synchronous motor.	CO2	7 Marks
	b)	A sub-station operating at full load of 1200kVA supplies a load at 0.7 power factor lagging. Calculate the permissible additional load at this power factor and the rating of synchronous condenser to raise the substation power to 0.9 lagging.	CO6	7 Marks

UNIT-V

9	a)	Describe the construction and working of shaded pole motor.	CO1	7 Marks
	b)	Discuss the modification necessary to operate a **dc** series motor satisfactorily on a single phase ac supply.	CO5	7 Marks

(OR)

10	a)	Explain double revolving field theory for single phase induction motor.	CO1	7 Marks
	b)	Describe the construction, working and application of reluctance motor.	CO1	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

TRANSMISSION AND DISTRIBUTION

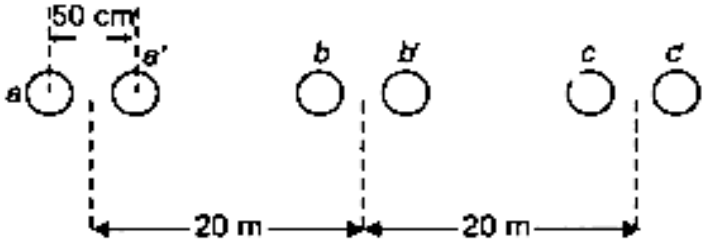
[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit.
All questions carry equal marks

UNIT-I

1	a)	Derive an expression for capacitances of a single phase transmission system.	CO2	8 Marks
	b)	Compute the inductance per phase per km of a 400KV 3-phase bundled conductor line with two sub conductors per phase has a horizontal configuration as shown below. The radius of each sub conductor is 1.6 cm.	CO2	6 Marks



(OR)

2	a)	Derive the expressions for electrostatic stress and most economical size of a single core cable.	CO6	7 Marks
	b)	A single core cable of conductor diameter 2cm and lead sheath of diameter 5.3cm is to be used on a 66KV, 3-phase system .Two inter sheaths of diameter 3.2cm and 4.1cm are introduced between the core and lead sheath. If the maximum stress in the layers is the same, find the voltages on the inter sheaths.	CO4	7 Marks

UNIT-II

3	a)	Explain Ferranti effect and surge impedance loading.	CO3	7 Marks
	b)	A 3-phase overhead transmission line has a total series impedance per phase of $200\angle 80^0$ ohms and a total shunt admittance of $0.0013\angle 90^0$ mho per phase. The line delivers a load of 80MW at 0.8p.f lagging and 220KV between the lines. Calculate: i) The A ,B ,C and D constants of the line. ii) The sending end voltage, current and power factor of the line. iii) The efficiency of transmission.	CO4	7 Marks

(OR)

4	a)	Explain the behavior of travelling waves in long transmission lines.	CO1	7 Marks
	b)	Derive reflection and refraction coefficients of a line terminated with a resistance.	CO2	7 Marks

UNIT-III

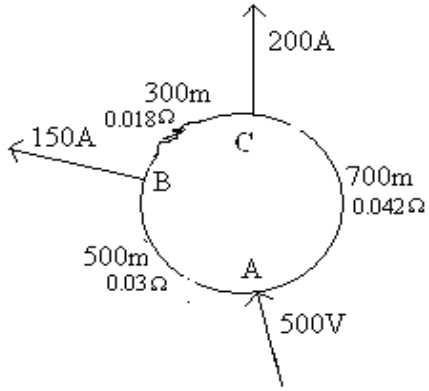
5	a)	Explain the voltage distribution in suspension type insulator.	CO1	7 Marks
	b)	In a 33KV overhead line, there are three units in the string of insulators. If the capacitance between each insulator pin and earth is 11% of self capacitance of each insulator, find; i) the distribution of voltage over 3 insulators. ii) string efficiency.	CO4	7 Marks

(OR)

6	a)	Define corona and explain the factors affecting the corona loss.	CO1	7 Marks
	b)	The towers of height 30m and 90m respectively support a transmission line. Conductor at water crossing. The horizontal distance between the towers is 500m. If the tension in the conductor is 1600Kg, find the minimum clearance of the conductor and water and clearance mid-way between the supports. Weight of Conductor is 1.5Kg/m. Bases of the towers can be considered to be at water level	CO4	7 Marks

UNIT-IV

7	a)	Derive the expression for the power loss in a uniformly loaded distributor fed at one end.	CO4	7 Marks
	b)	In a **dc** ring main shown a voltage of 500 volts is maintained at A. At B a load of 150A is taken and at C a load of 200A is taken .Find the voltages at B and C .The resistance of each conductor of the main is 0.03Ω per 1000 mts.	CO4	7 Marks



(OR)

8	a)	Derive the equations for voltage drop of AC distributor fed at one end.	CO4	7 Marks
	b)	A 2-wire dc street mains AB, 500m long is fed from both ends at 250V. Loads of 50A, 60A, 40A and 30A are tapped at distances of 100m, 250m, 350m and 400m from the end A respectively. If the cross sectional area of distributor conductor is $1cm^2$, find the minimum consumer voltage. Take specific resistance of 1.7×10^{-6} Ω cm.	CO2	7 Marks

UNIT-V

9	a)	Draw the layout of a substation. Make a list of the main equipment in substation.	CO7	7 Marks
	b)	Draw and explain the line diagram of a typical transmission and distribution scheme. Indicate clearly the voltage levels used at different stages.	CO6	7 Marks

(OR)

10	a)	Explain the process of typical distribution system planning with flowchart.	CO6	7 Marks
	b)	Explain the factors to be considered for substation location.	CO7	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

RENEWABLE ENERGY

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit.
All questions carry equal marks

UNIT-I

1	a)	Classify energy sources based on origin and explain the importance of renewable energy sources.	CO1	7 Marks
	b)	What are the prospects of renewable and non-renewable energy sources?	CO1	7 Marks
		(OR)		
2	a)	Describe the main features of various types of renewable and non-renewable energy resources.	CO1	7 Marks
	b)	Define the beam radiation, diffused, albedo and global radiation of solar energy.	CO1	7 Marks

UNIT-II

3	a)	Write the advantages and disadvantages of concentrating collectors over flat-plate types of solar collectors.	CO4	7 Marks
	b)	Explain the working of solar water heating with a neat schematic diagram.	CO2	7 Marks
		(OR)		
4	a)	Explain the principle of a solar collector and classify the different types of solar thermal collectors.	CO2	7 Marks
	b)	What is solar pond and explain its working in detail?	CO2	7 Marks

UNIT-III

5	a)	Explain the working principle of wind energy conversion of a power plant.	CO4	7 Marks
	b)	What are the methods of harnessing the energy from geothermal wells?	CO1	7 Marks
		(OR)		
6	a)	What are the environmental aspects of wind energy?	CO2	7 Marks
	b)	Write the current status and potential of geothermal energy source in India.	CO1	7 Marks

UNIT-IV

7	a)	What are the limitations of the tidal energy technology?	CO2	7 Marks
	b)	Describe the major types of ocean thermal energy conversion systems.	CO1	7 Marks
		(OR)		
8	a)	What types of sites are considered and suitable for ocean wave energy?	CO2	7 Marks
	b)	Explain the various types of generating systems and generators considered for use in micro hydro resources.	CO1	7 Marks

UNIT-V

9	a)	Explain the principle of biomass energy conversion.	CO1	7 Marks
	b)	Write the anaerobic/aerobic digestion in biomass energy conversion.	CO2	7 Marks
		(OR)		
10	a)	What are the main advantages and disadvantages of biomass energy?	CO2	7 Marks
	b)	What are the factors affecting the performance of biogas digester?	CO1	7 Marks

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III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

DESIGN OF MACHINE ELEMENTS-II

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	A full journal bearing of 60mm diameter and 80mm long has a bearing pressure of 1.7 N/mm^2. The speed of the journal is 800 r.p.m. and the ratio of journal diameter to the diameteral clearance is 1000. The bearing is lubricated with oil whose absolute viscosity at operating temperature of 70^{0}C may be taken as 0.01 kg/m-s. The room temperature is 30^{0}C. Find: i) the amount of artificial cooling required ii) the mass of the lubricating oil required if the difference between the outlet and inlet temperature of oil is 15^{0}C. Take specific heat of oil as 1890J/kg/^{0}C.	CO3	14 Marks

(OR)

2	In a journal bearing radial load is 3kN, journal speed is 1200 r.p.m, journal diameter is 50mm, length of journal is 70mm and clearance is 0.1mm, viscosity of oil is 30cP. Assume that there is no external assistance for removal of heat; calculate: i) Coefficient of friction. ii) Power lost in friction. iii) Minimum oil film thickness. iv) Temperature rise.	CO3	14 Marks

UNIT-II

3	The work schedule for a ball bearing is given below: i) At speed of 900 r.p.m, the radial load is 6000N for 20% of time. ii) At speed of 540 r.p.m, the radial load is 3000N for 80% of time. iii) Loads are steady. iv) The bearing life at 12.0 hours/day is estimated as 6 years. Calculate the maximum value of basic dynamic load that the bearing can withstand while in use.	CO4	14 Marks

(OR)

4	Select a suitable ball bearing from SKF series to support a radial load of 6kN and an axial load of 3kN. Minimum life required is 12,000 hours at 1440 r.p.m. For the selected bearing, find: i) the expected life under the given loads. ii) the equivalent load that can be supported with a probability of survival of 90% with 8,000 hours.	CO3	14 Marks

UNIT-III

5	A pair of spur gears with 20° pressure angle consists of a 25 teeth pinion meshing with a 60 teeth gear. The module is 5mm, while the face width is 45mm. The pinion rotates at 500 r.p.m. The gears are made of steel and heat treated to a surface hardness of 220BHN. Assume that dynamic load is accounted by means of the velocity factor. The service factor and the factor of safety are 1.75 and 2 respectively. Calculate: i) wear strength of gears. ii) the static load that the gears can transmit without pitting. iii) rated power that can be transmitted by gears.	CO3	14 Marks

(OR)

6		Design a pair of helical gears to transmit 10kW at 1000 r.p.m of the pinion. Reduction ratio of 5 is required.	CO3	14 Marks

UNIT-IV

7	a)	What is Wahl stress concentration factor? Explain it's importance.	CO1	7 Marks
	b)	The spring loaded safety valve for a boiler is required to blow off at a pressure of 1.5N/mm^2. The diameter of the valve is 60mm. Design a suitable compression spring for the safety valve, assuming spring index to be 6 and 25mm initial compression. The maximum lift of the valve is 15mm. The shear stress in the spring material is to be limited to 450MPa, Take G = 0.84 X 10^{5}MPa.	CO3	7 Marks

(OR)

8	a)	Discuss briefly about the application and construction of leaf spring.	CO4	7 Marks
	b)	A semi elliptical laminated spring 900mm long and 55mm wide is held together at the centre by a band 50mm wide. If the thickness of each leaf is 5mm, find the number of leaves required to carry a load of 4500N. Assume a maximum working stress of 490Mpa. If two leaves are of the full length, find deflection of the spring. The Young's modulus for the spring material may be taken as 210kN/mm^2	CO4	7 Marks

UNIT-V

9		Design a cast iron piston for a 4-stroke single acting engine for the following data: Cylinder bore dia = 100mm. Stroke length = 120mm. Gas pressure = 5 MPa. BMEP = 0.5 MPa. Fuel consumption = 0.15 Kg/BP/hr. Speed = 2200 r.p.m.	CO5	14 Marks

(OR)

10		Design a V-belt drive actuated by an electric motor to drive a conveyor. The power supplied by the electric motor is 4kW and the angular speed at the input shaft is 150rad/sec. The speed ratio of the drive is to be approximately 2.8.	CO3	14 Marks

CODE No.:16BT50302 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

INDUSTRIAL ENGINEERING AND MANAGEMENT

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain various functions of Management.	CO1	7 Marks
	b)	Discuss the Scientific Management Approach of F.W. Taylor.	CO1	7 Marks

(OR)

2		Define systems concept for Management.	CO1	14 Marks

UNIT-II

3	a)	Discuss various types of plant layouts.	CO2	7 Marks
	b)	Describe preventive maintenance and discuss why it is important and crucial in sector.	CO2	7 Marks

(OR)

4		Explain in detail the concept of Reliability, Availability, Maintenance strategy and the strategic importance of maintenance and reliability in manufacturing sector.	CO2	14 Marks

UNIT-III

5	a)	Discuss briefly the role of work study in increasing industrial productivity.	CO3	7 Marks
	b)	Describe various "Stages" of method study.	CO3	7 Marks

(OR)

6		Briefly explain the following with a neat sketch and clearly distinguish the differences between them. i) Flow Process Chart. ii) Two-Handed process chart.	CO3	14 Marks

UNIT-IV

7		Calculate the Inventory Management using ABC analysis for the following problem.	CO4	14 Marks

Item Number	1	2	3	4	5	6	7	8	9	10
Unit Cost	5	11	15	8	7	16	20	4	9	12
Actual Demand	48000	2000	300	800	4800	1200	18000	300	5000	500

(OR)

8	a)	Discuss the significance of investigation and analysis of accidents in the industries.	CO6	7 Marks
	b)	Discuss the significance of duties of plant safety inspector in the industries.	CO6	7 Marks

UNIT-V

9	a)	Construct an operating characteristic curve n = 90 and c = 4.	CO5	7 Marks
	b)	Discuss about single sampling and double sampling plan.	CO5	7 Marks

(OR)

10 The following collection of data represents samples of the amount of force applied in a gluing process. Determine if the process is in control by calculating the appropriate upper and lower control limits of the X-bar and R charts. CO5 14 Marks

Sample	1	2	3	4	5
1	10.682	10.689	10.776	10.798	10.714
2	10.787	10.86	10.601	10.746	10.779
3	10.78	10.667	10.838	10.785	10.723
4	10.591	10.727	10.812	10.775	10.73
5	10.693	10.708	10.79	10.758	10.671
6	10.749	10.714	10.738	10.719	10.606
7	10.791	10.713	10.689	10.877	10.603
8	10.744	10.779	10.11	10.737	10.75
9	10.769	10.773	10.641	10.644	10.725
10	10.718	10.671	10.708	10.85	10.712

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

METROLOGY AND MEASUREMENTS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit.
All questions carry equal marks

UNIT-I

1 a) State and describe the important elements of measurement. CO1 6 Marks

b) A slip gauge set M45 consists of the following. CO3 8 Marks

Range (mm)	Steps (mm)	No. of blocks
1.001 to 1.009	0.001	9
1.01 to 1.09	0.01	9
1.1 to 1.9	0.1	9
1 to 9	1	9
10 to 90	10	9

Choose the suitable minimum number of slip gauges to build up the dimensions.

i) 43.716. ii) 24.095.

(OR)

2 a) Describe briefly the systems of obtaining different types of fits with suitable sketches. CO1 6 Marks

b) A 20mm diameter shaft and bearing are to be assembled with a clearance fit. The tolerance and allowances are as under. CO3 8 Marks

Allowance = 0.002mm
Tolerance on hole = 0.005mm
Tolerance on shaft = 0.003mm

Find the limits of size for the hole and shaft if

i) the hole basis system is used.
ii) shaft basis system is used.

The tolerances are disposed of unilaterally.

UNIT-II

3 a) What are snap gauges? Sketch and describe an adjustable snap gauge. CO1 7 Marks

b) Describe the essential characteristics of comparator. CO1 7 Marks

(OR)

4 a) Describe the basic principle of a pneumatic comparator with a neat sketch. CO1 6 Marks

b) An angle of 102^0 - 8' - 42" is to be measured with the help of standard 13 pieces set of angle gauges and a square block. Sketch the combination. CO3 8 Marks

UNIT-III

5 a) What is optical flat? Explain how interference fringes are formed when optical flat is placed on a surface to be tested. CO2 7 Marks

b) Describe the Auto Collimator method for checking straightness of a surface. CO4 7 Marks

(OR)

6	a)	With the help of neat sketch, describe the construction and working of Profilograph.	CO5	7 Marks
	b)	In the measurement of surface roughness, heights of 20 successive peaks and valleys were measured from a datum as follows: 35, 25, 40, 22, 35, 18, 42, 25, 35, 22, 36, 18, 42, 22, 32, 21, 37, 18, 35, 20 microns. If these measurements were obtained over length of 20mm, determine the CLA and RMS values of the surface.	CO3	7 Marks

UNIT-IV

7	a)	Name the various types of pitch errors found in screw. State their causes.	CO2	6 Marks
	b)	What is the 'best size wire'? Derive the expression for the same.	CO2	8 Marks

(OR)

8	a)	Describe the Parkinson's gear tester and state its limitations.	CO4	8 Marks
	b)	Calculate the setting of a gear tooth vernier calliper for a straight spur gear having 40 teeth of module 4.	CO5	6 Marks

UNIT-V

9	a)	Discuss the importance of gauge factor in strain gauges.	CO2	6 Marks
	b)	Explain the following. i) Principle resistance strain gauge. ii) Strain gauge rosettes.	CO1	8 Marks

(OR)

10	a)	Explain the principle of Thermo couple.	CO1	6 Marks
	b)	Describe any one method of measuring the pressure.	CO5	8 Marks

CODE No.: 16BT50304 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

REFIRGERATION AND AIR CONDITIONING

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define Ton of Refrigeration and COP. Explain the difference between Refrigerator and Heat pump with the help of simplified sketches and show that $COP_{HP} = COP_{REF} + 1$.	CO1	8 Marks
	b)	A cold storage is to be maintained at -6^0C while the surroundings are at 30^0C. The heat leakage from the surroundings in to the cold storage walls is estimated to be 30kW. The actual COP of the refrigeration plant is one third of an ideal plant working between the same temperature limits. Find the power required to drive the plant.	CO3	6 Marks

(OR)

2	a)	What is the necessity of aircraft refrigeration system? Discuss the relative advantages and disadvantages of Air refrigeration system over VCR system.	CO2	6 Marks
	b)	Explain the working of Bootstrap air cooling system with the help of a neat sketch and derive the expression for its COP.	CO1	8 Marks

UNIT-II

3	a)	Explain the effect of suction pressure, discharge pressure, sub-cooling and superheating of the refrigerant on the performance of the VCR system.	CO3	8 Marks
	b)	28 tonnes of ice from and at 0^0C is produced per day in an ammonia refrigerator. The temperature range in the compressor is from 25^0C to -15^0C. The vapour is dry and Saturated at the end of compression and an expansion valve is used. Assuming a coefficient of performance of 62% of theoretical, calculate the power required to drive the compressor.	CO3	6 Marks

(OR)

4	a)	Explain about; i) Physical. ii) Chemical. iii) Thermodynamic properties of refrigerants required.	CO1	6 Marks
	b)	A R-12 refrigerating machine works on VCR system. The temperature of refrigerant in the evaporator is 20^0C. The vapour is dry and saturated when it enters the compressor and leaves it in a superheated condition. The condenser temperature is 30^0C. Assuming specific heat of R-12 in superheated condition is 1.884 kJ/kgK, determine: i) COP. ii) Refrigerating effect. iii) Heat rejected in condenser per kg. iv) Condition of refrigerant at the entrance of evaporator.	CO4	8 Marks

UNIT-III

5	a)	What are the changes made in the place of compressor of VCR system in VAR system? Discuss its advantages and disadvantages.	CO1	6 Marks
	b)	A vapour absorption system works with T_g= 360K, T_a= 310K and T_e=260K. Obtain the COP of the system. If the evaporator temperature falls to 255K, what should be the generator temperature in order to operate the system with the same COP.	CO3	8 Marks

(OR)

6	a)	Explain the working of steam jet refrigeration system with the help of a neat sketch.	CO3	8 Marks
	b)	Enumerate the advantages and disadvantages of steam refrigeration system.	CO3	6 Marks

UNIT-IV

7	a)	Explain the construction of Psychrometric chart by showing various lines in it.	CO5	6 Marks
	b)	100 m^3 of air per minute at 30^0C DBT and 60% RH is cooled to 18^0 C DBT and 15^0 C DPT by allowing it through a cooling coil. Find: i) Capacity of cooling coil in kJ/h. ii) Amount of water vapour removed per hr. iii) Relative humidity of air coming out and its wet bulb temperature.	CO5	8 Marks

(OR)

8	a)	Define and derive the psychrometric relations for the following terms. i) Absolute humidity. ii) Relative humidity. iii) Degree of saturation.	CO5	6 Marks
	b)	200m^3 of air per minute is passed through the adiabatic humidifier. The condition of air at inlet is 40^0C dry bulb temperature and 15% relative humidity and the outlet condition is 25^0C dry bulb temperature and 20^0C wet bulb temperature. Find the dew point temperature and the amount of water vapour added to the air per minute.	CO3	8 Marks

UNIT-V

9	a)	Explain the working of Winter air conditioning system for cold and dry air with the help of neat sketch and showing important calculation that can be made	CO6	6 Marks
	b)	The following data refers to air conditioning of a public hall: seating capacity of hall = 1000 persons; Outside conditions: 40^0C DBT and 20^0CWBT, Required comfort conditions: 20^0C DBT and 50% RH, Quantity of outdoor air supplied: 0.3m^3 /min/person. The desired conditions are achieved first by adiabatic humidifying and then cooling. Determine: i) Capacity of the cooling coil surface temperature of the coil if BF is 0.25. ii) Capacity of the humidifier and its efficiency.	CO6	8 Marks

(OR)

10	a)	Draw a human comfort chart and show various lines in it and discuss the load calculations done in summer air conditioning system.	CO6	6 Marks
	b)	800m^3/min of re-circulated air at 22^0C DBT and 10^0C DPT is to be mixed with 300m^3/min of fresh air at 30^0C DBT and 50% RH. Determine the enthalpy, specific volume, humidity ratio and dew point temperature of the mixture	CO6	8 Marks

NOTE: ***Refrigerants and Refrigerant properties data book – by M.L. Mathur and F.S. Mehta must be supplied in the examination hall***

CODE No.: 16BT50305 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

THERMAL ENGINEERING – II

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Why is the Carnot cycle not a realistic model for steam power plant? Explain the Reheat Rankine cycle with the aid of neat sketch and T-s diagram.	CO1	7 Marks
	b)	Consider a steam power plant operating on the ideal regenerative Rankine cycle with one open feed water heater. Steam enters the turbine at 15Mpa and 600^{0}C and is condensed in the condenser at a pressure of 10kPa. Some steam leaves the turbine at a pressure of 1.2MPa and enters the open feed water heater. Determine the fraction of steam extracted from the turbine and the thermal efficiency of the cycle.	CO2, CO3, CO5	7 Marks

(OR)

2	a)	What are the requirements of boilers? Differentiate a water-tube boiler form a fire-tube boiler.	CO1	7 Marks
	b)	With the aid of neat sketch, explain the working of Lamont Boiler.	CO1	7 Marks

UNIT-II

3	a)	Explain equivalent evaporation, factor of evaporation, boiler efficiency and establish the energy balance in a boiler.	CO1, CO4	7 Marks
	b)	A boiler is supplied with 15,900 kg of feed water at 15^{0}C, during a trial period of 8 hours and 20 minutes. At the end of the trial, the weight of water was 680kg less than that of commencement of trial. The steam produced at the pressure of 12.5 bar is 95% dry. The coal having calorific value of 30,000 kJ/kg is fired at the rate of 278.5kg/h. Calculate: i) Actual evaporation rat. ii) Equivalent evaporation. iii) Thermal efficiency of the boiler.	CO1, CO4	7 Marks

(OR)

4	a)	Compare natural and artificial draughts and derive an expression for draught produced in terms of height of chimney, ambient and flue gas temperatures. State clearly the assumptions made.	CO1, CO3	7 Marks
	b)	A boiler uses 16 kg of air per kg of fuel, when the fuel consumption is at the rate of 1800 kg/h. Actual draught required is 20mm of water when all losses are considered. The surrounding air temperature is 27^{0}C and the flue-gas temperature is 277^{0}C. Determine the chimney height and its diameter if actual velocity of the flue gases is 0.35 times the theoretical velocity due to roughness of interior surfaces of the chimney.	CO2, CO3	7 Marks

UNIT-III

5	a)	Derive the condition for maximum discharge through the nozzle and discuss the effect of irreversibilities on nozzle efficiency with the help of a T-s diagram.	CO1, CO2	7 Marks
	b)	In a convergent-divergent nozzle, the steam enters at 15bar and 300^{0}C and leaves at a pressure of 2 bar. The inlet velocity to the nozzle is 150m/s. Find the required throat and exit areas for mass flow rate of 1kg/s. Assume nozzle efficiency to be 90% and c_p of steam is 2.4 kJ/kg.K.	CO2, CO3, CO5	7 Marks

(OR)

6	a)	Distinguish between impulse and reaction turbines. Derive an expression for maximum blade efficiency for an impulse turbine in terms of blade speed ratio.	CO2, CO3	7 Marks
	b)	Steam issues from the nozzles of a single impulse turbine at 850m/s. The blades are moving at 350m/s. The blade tip angles at inlet and exit are each 36^0. The steam enters the blades without shock and the flow over the blades is frictionless. Determine i) The angle at which the nozzles are inclined to the direction of motion of the blades. ii) The diagram efficiency.	CO2, CO3	7 Marks

UNIT-IV

7	a)	Explain the working of Parson's reaction turbine with the combined velocity diagram.	CO1, CO2	7 Marks
	b)	In a parson reaction turbine, the angles of receiving tips are 35^0 and discharging tips are 20^0. The blade speed is 100m/s. Calculate the tangential force, power developed, diagram efficiency and axial thrust of the turbine, if its steam consumption is 1kg/min.	CO2, CO3	7 Marks

(OR)

8	a)	Differentiate between jet and surface condensers and explain the working of an evaporative condenser.	CO1	7 Marks
	b)	During a trial on a condenser, the following readings were recorded: Barometer reading =766mm of Hg, Actual vacuum recorded by gauge = 716 mm of Hg, Temperature of exhaust steam = 35^0C, Temperature of hot well = 29^0C, inlet temperature of cooling water = 15^0C, Outlet temperature of cooling water = 24^0C. Calculate: i) Corrected vacuum. ii) Vacuum efficiency. iii) Under cooling of condensate. iv) Condenser efficiency.	CO2, CO3	7 Marks

UNIT-V

9	a)	What are the different methods used to improve efficiency of gas turbine plant? Explain any one method with a neat sketch.	CO1, CO2	7 Marks
	b)	In a gas turbine power plant, operating on Joule cycle, air is compressed from 1 bar and 15^0C through a pressure ratio of 6. It is then heated to 727^0C in the combustion chamber and expanded back to a pressure of 1 bar. Calculate the net work done, cycle efficiency and work ratio. Assume isentropic efficiencies of turbine and compressor are 90 and 85% respectively.	CO2, CO3	7 Marks

(OR)

10	a)	Explain the working of turboprop engine.	CO1	4 Marks
	b)	A turbojet engine flying at a speed of 990km/h consumes air at a rate of 54.5 kg/s. Calculate: i) Exit velocity of jet, when enthalpy changes for nozzle is 200 kJ/kg and velocity coefficient is 0.97. ii) Fuel-flow rate in kg/s, when air fuel ratio is 75:1. iii) Thermal efficiency of the plant, when the combustion efficiency is 93% and calorific value of fuel is 45000 kJ/kg. iv) Propulsive power. v) Propulsive efficiency. vi) Overall efficiency.	CO2, CO3	10 Marks

CODE No.: 16BT50306 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

HUMAN RESOURCE MANAGEMENT

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Explain the significance of environmental scanning for effective management of HR in an organization.	CO5	14 Marks
		(OR)		
2		Discuss various factors affecting HRP and explain its barriers.	CO1	14 Marks

UNIT-II

3		Define the term selection. Explain its nature and list out various steps to be considered in selection process.	CO2	14 Marks
		(OR)		
4		Explain various steps in job evaluation and its methods.	CO2	14 Marks

UNIT-III

5	a)	Distinguish between training and development.	CO2	7 Marks
	b)	Define training. Explain various steps in training and its methods.	CO2	7 Marks
		(OR)		
6	a)	Describe in brief the nature of training and development in the organization.	CO2	7 Marks
	b)	Define performance appraisal. Explain its nature.	CO2	7 Marks

UNIT-IV

7		Define Industrial relations. Explain its nature and importance.	CO1	14 Marks
		(OR)		
8		Explain the term Industrial dispute. List the main causes of industrial disputes in India.	CO1	14 Marks

UNIT-V

9		Define the concept of safety. Explain the causes for industrial accidents.	CO5	14 Marks
		(OR)		
10		Explain the strategies to be followed by HR department in improving ethical decision making in an organization.	CO6	14 Marks

CODE No.: 16BT50307 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

INSTRUMENTATION AND CONTROL SYSTEMS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Analyze the various sources of errors in measuring techniques.	CO4	7 Marks
	b)	Write notes on dynamic performance characteristics of a system.	CO1	7 Marks
		(OR)		
2		Classify foundation field bus and explain in detail.	CO1	14 Marks

UNIT-II

3	a)	Adapt any two inferential methods in level measurement.	CO4	10 Marks
	b)	What is the difference between direct and indirect liquid level measuring devices?	CO4	4 Marks
		(OR)		
4		Explain the construction, working and applications of the following types of flow meters: i) Magnetic flow meter. ii) Turbine flow meter.	CO5	14 Marks

UNIT-III

5	a)	Define the terms: (i) Block (ii) Summing point (iii) Branch Point.	CO1	6 Marks
	b)	Mention the application of automatic control devices in industries.	CO5	4 Marks
	c)	What are the limitations of open loop systems?	CO1	4 Marks
		(OR)		
6	a)	Explain the basic elements of servo mechanism.	CO1	4 Marks
	b)	Derive the transfer function of a thermal system when the heat input rate is suddenly increased from its steady conditions. Discuss the assumptions made.	CO3	10 Marks

UNIT-IV

7	a)	Obtain the response of PID controller for a step change in input.	CO1	7 Marks
	b)	Give the use of feed forward controller and enumerate the advantages and disadvantages of feed forward controller.	CO1	7 Marks
		(OR)		
8	a)	Discuss the inverse acting processes.	CO1	7 Marks
	b)	What is split range control? Explain a simple application, where it is used.	CO1	7 Marks

UNIT-V

9	a)	State some applications of PLC.	CO5	7 Marks
	b)	Identify the need of software used in DAQ system.	CO3	7 Marks
		(OR)		
10	a)	Explain the functioning of PC based data acquisition system.	CO1	7 Marks
	b)	What are SCADA systems desirable properties?	CO1	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

MECHATRONICS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Contrast Mechatronics approach over the traditional approach.	CO1	7 Marks
	b)	Discuss the scope and applications of Mechatronics in industries for increase in productivity.	CO1	7 Marks
		(OR)		
2	a)	Define Mechatronics and explain basic building elements.	CO1	7 Marks
	b)	Describe the Mechatronics design process with the help of suitable example.	CO1	7 Marks

UNIT-II

3	a)	Describe the performance terms of sensors and transducers.	CO2	7 Marks
	b)	Enumerate various data presentation elements. Which elements suggested for sensing fully automatic CNC Lathe machine?	CO2	7 Marks
		(OR)		
4	a)	How do you classify the sensors and transducers.	CO2	7 Marks
	b)	What are the basic components of hydraulic system? Explain functionality of each component.	CO2	7 Marks

UNIT-III

5	a)	Explain current voltage converters in signal conditioning.	CO3	7 Marks
	b)	What are the various Filters that you come across in Signal conditioning? Explain.	CO3	7 Marks
		(OR)		
6	a)	Discuss various data acquisition system.	CO3	7 Marks
	b)	Take suitable example and explain function of ADC and DAC.	CO3	7 Marks

UNIT-IV

7	a)	How Zeigler Nichols method is useful in tuning of PID Controller? If a system having a step response of gain K of 2, delay time of 6 sec and time constant of 18 sec, find a suitable PID controller for the system	CO4	7 Marks
	b)	Describe briefly the PID controller.	CO4	7 Marks
		(OR)		
8	a)	Differentiate between proportional, proportional integral and proportional integral derivative controllers. Also plot the expense of these controllers to a unit step change in error.	CO4	7 Marks
	b)	Why proportional control action should not be used alone? Give the Proportional (P) control schematic for a single capacitance liquid level process.	CO4	7 Marks

UNIT-V

9	a)	Explain suitable Mechatronics system for traffic control in process industries.	CO5	7 Marks
	b)	Design Mechatronic system for Vending machine suitable to Railway/ Bus station.	CO5	7 Marks

(OR)

10	a)	Explain the Mechatronic design of car parking barriers in detail.	CO5	7 Marks
	b)	Justify the importance of ethics as a design constraint.	CO6	7 Marks

CODE No.: 16BT50401 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

DIGITAL COMMUNICTIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss the elements of digital communication system and list the advantages of it.	CO1	7 Marks
	b)	What is Delta Modulation (DM)? Implement transmitter and receiver of DM system.	CO2	7 Marks
		(OR)		
2	a)	Explain quantization error and derive an expression for maximum SNR in PCM system that uses linear quantization.	CO1	7 Marks
	b)	What is slope overload distortion and granular noise in Delta Modulation? How is removed in ADM?	CO2	7 Marks

UNIT-II

3	a)	Compare the performance of PCM coded transmission system using BPSK and FSK modulation.	CO2	7 Marks
	b)	Analyze the effect of thermal noise in Delta Modulation System.	CO2	7 Marks
		(OR)		
4		Estimate the Output Signal to Noise Ratio in Delta Modulation System.	CO2	14 Marks

UNIT-III

5	a)	Compare different types of digital modulation scheme.	CO2	7 Marks
	b)	Implement a digital system for generation and reception of BPSK.	CO6	7 Marks
		(OR)		
6	a)	Derive the expression for maximum signal to noise ratio in case of optimum filter.	CO6	7 Marks
	b)	Sketch the QPSK waveform for binary data 11100100. Draw Geometrical representation of QPSK. Compare QPSK with BPSK with respect to bandwidth and probability of error.	CO2	7 Marks

UNIT-IV

7	a)	Define Entropy and explain the properties of Entropy.	CO1	4 Marks
	b)	A discrete message source is generating the message sequence [X] = [A B C D E F G H] with probabilities [P] = [0.50, 0.15, 0.15, 0.08, 0.08, 0.02, 0.01, 0.01]. Find codeword's using Huffman coding.	CO5	10 Marks
		(OR)		
8	a)	Explain the concept of amount of information and its properties.	CO4	6 Marks
	b)	An analog signal band limited to 10KHz quantize 8-levels of PCM system with probability of 1/4, 1/5, 1/4, 1/10, 1/20, 1/10, 1/20 and 1/10 respectively. Find the entropy and rate of information.	CO5	8 Marks

UNIT-V

9	a)	What are the advantages and disadvantages of block codes and convolution codes?	CO4	6 Marks
	b)	Consider (6, 3) Linear Block code. Find Generator matrix, Parity check matrix and error correcting capabilities of the code.	CO3	8 Marks

(OR)

10	a)	Construct encoder for the (7, 4) binary cyclic code generated by $g(x) = 1 + x + x^3$.	CO3	8 Marks
	b)	Explain encoding procedure of Linear Block codes.	CO4	6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

MICROPROCESSORS &MICROCONTROLLERS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the significance of pointer registers in 8086 bringing out the advantages.	CO1	8 Marks
	b)	Draw the flow diagram for CALL/RETURN in 8086 processor and explain the flow.	CO1	6 Marks

(OR)

2	a)	Explain the following Assembler Directives of 8086 Microprocessor. i) SEGMENT. (ii) ENDP.	CO1	4 Marks
	b)	Explain the timing diagram of maximum mode read operation.	CO1	10 Marks

UNIT-II

3	a)	Write a program to arrange a string of five eight bit numbers in descending order.	CO4	6 Marks
	b)	Explain following instructions with an example: i) SCAS. ii) REP. iii) SHR. iv) XCHG.	CO1	8 Marks

(OR)

4	a)	What do you mean by Interrupt Vector table? Explain the contents of the table in detail.	CO1	8 Marks
	b)	Explain the OCWs of 8259 PIC.	CO3	6 Marks

UNIT-III

5	a)	Explain the Status word of 8251 USART.	CO1	6 Marks
	b)	Explain the Synchronous and Asynchronous mode of transfer in 8251.	CO1	8 Marks

(OR)

6		Describe the functional block diagram of 8257 DMA Controller.	CO2	14 Marks

UNIT-IV

7	a)	Identify valid/invalid instruction for 8051 microcontroller with justification for the following: i) MOVX A, @DPTR; ii) MUL R0, R1.	CO1	4 Marks
	b)	Draw the interfacing diagram of a 3 x 3 keypad with 8051 microcontroller and develop the software to sense pressed key and display it on seven segment display connected at Port 2.	CO2	7 Marks
	c)	Explain about register bank selection in 8051.	CO1	3 Marks

(OR)

8	a)	Explain how we can double the baud rate when serial communication happens between a microcontroller and a peripheral.	CO4	6 Marks
	b)	Explain DJNZ and JB instructions of 8051 microcontroller.	CO4	4 Marks
	c)	Demonstrate the IP register in 8051.	CO1	4 Marks

UNIT-V

9		Describe the SFR organization in an 8051 microcontroller with a neat sketch.	CO1	14 Marks

(OR)

10	a)	Explain the functions of the ports in 8051 microcontroller.	CO4	7 Marks
	b)	How serial communication takes place in 8051? What is the function of PCON register in 8051?	CO1	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

VLSI DESIGN

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Derive the relation between $I_{ds} - V_{ds}$ in non-saturation region.	CO2	7 Marks
	b)	Find gm for any n channel transistor with V_{gs}=1.2V, V_t= 0.8V, W/L=10, $\mu_n C_{ox}$= 92 µA/V^2.	CO3	7 Marks
		(OR)		
2	a)	Derive the expression for pull-up to pull-down ratio for an NMOS inverter driven through one or more pass transistors.	CO3	8 Marks
	b)	With neat sketches, explain Diffusion process in IC fabrication.	CO1	6 Marks

UNIT-II

3	a)	Draw the schematic and stick diagram of CMOS NAND gate.	CO4	7 Marks
	b)	Calculate NMOS and CMOS inverter delays.	CO5	7 Marks
		(OR)		
4	a)	Draw the λ-based design rules for transistors.	CO4	8 Marks
	b)	Calculate Ron resistance of NMOS inverter.	CO2	6 Marks

UNIT-III

5	a)	Explain the construction of CMOS based adder with necessary diagrams.	CO3	7 Marks
	b)	Explain in detail about critical delay path in array multiplier.	CO6	7 Marks
		(OR)		
6	a)	Explain the construction of carry-skip adder.	CO4	7 Marks
	b)	Briefly explain about 4 x 4 barrel shifter.	CO2	7 Marks

UNIT-IV

7	a)	Draw the schematic of synchronous counter and explain its operation.	CO2	8 Marks
	b)	Draw and explain the operation of SRAM cell.	CO3	6 Marks
		(OR)		
8	a)	Write briefly about channelled gate arrays.	CO3	8 Marks
	b)	What is CPLD? Draw its basic structure and give its applications.	CO4	6 Marks

UNIT-V

9	a)	What is need for low power VLSI chips?	CO1	7 Marks
	b)	Write short notes on manufacturing test principles.	CO5	7 Marks
		(OR)		
10	a)	Explain how the cost of the chip can effect with testing levels.	CO5	7 Marks
	b)	Explain the following with respect to CMOS testing. i) ATPG ii) Fault simulation iii) Statistical Fault analysis	CO1	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

ELECTRONIC MEASUREMENTS AND INSTRUMENTATION

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit.
All questions carry equal marks

UNIT-I

1	a)	What are the different types of errors that occur during measurement? Explain.	CO1	7 Marks
	b)	Design a Universal shunt to provide an ammeter with current ranges of **10mA, 50mA** and **100mA**. A D'Arsonval meter movement with an internal resistance of **100Ω** and a full scale current of **50μA** is used.	CO3	7 Marks
		(OR)		
2	a)	Illustrate the construction and working of shunt type ohmmeter.	CO1	7 Marks
	b)	A basic D'Arsonval movement with a full scale deflection of 50μA and an internal resistance of 1800 Ω is available. It is to be converted into a 0-1V, 0-5V, 0-25V, 0-225V multirange voltmeter using an individual multipliers for each range. Calculate the values of the individual resistors.	CO3	7 Marks

UNIT-II

3	a)	What are different types of Strain gauges and explain how the strain can be measured using them?	CO1	7 Marks
	b)	Describe the construction and working principle of thermocouples. Describe thermo-electric laws and its applications.	CO1	7 Marks
		(OR)		
4	a)	Four arms of a Hays bridge are arranged as follows: AD is coil of unknown impedance Z DC is a non-inductive resistance of 1kΩ, CD is a non-inductive resistance of 800Ω in series with a standard capacitor of 2μF, BA is a non-inductive resistance of 16500Ω, if the supply frequency is 50Hz. Calculate the value of Land R of coil. When the bridge is balanced.	CO4	7 Marks
	b)	Derive the equations for galvanometer current under unbalanced Wheatstone's bridge.	CO3	7 Marks

UNIT-III

5	a)	Draw the block schematic of a sampling oscilloscope and explain its operation.	CO2	7 Marks
	b)	Demonstrate the basic principle of Triggered Sweep CRO.	CO2	7 Marks
		(OR)		
6	a)	Illustrate the concept of Frequency Selective Wave analyzer.	CO1	7 Marks
	b)	Analyze and compare logic analyzer and Spectrum analyzer.	CO2	7 Marks

UNIT-IV

7	a)	Describe the operation of X-Y Recorder with the help of a block diagram. List the applications of X-Y recodres.	CO1	7 Marks
	b)	Explain in detail about strip chart recorders.	CO1	7 Marks
		(OR)		
8	a)	Explain in detail about seven segment displays.	CO2	7 Marks
	b)	Illustrate the concept of BCD-DOT Matrix converter.	CO1	7 Marks

UNIT-V

9	a)	State the different ways in which Multi-channel DAS is used.	CO4	7 Marks
	b)	Design a single channel DAS using Miltiplexers.	CO3	7 Marks
		(OR)		
10	a)	Explain in detail about Voltage Telemetring System.	CO1	7 Marks
	b)	Illustrate the concept of Radio Freqency Telemetry.	CO1	7 Marks

CODE No.: 16BT50442 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

MICROPROCESSORS AND INTERFACING

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit.
All questions carry equal marks

UNIT-I

1	a)	What is the length of the instruction queue in 8086? Explain its usage. Explain the reason for limiting the length of the queue.	CO1	8 Marks
	b)	Explain the register organization of 8086 microprocessor.	CO1	6 Marks
		(OR)		
2	a)	With a neat sketch, explain the function of BIU and EU of 8086 microprocessor.	CO1	6 Marks
	b)	How an 8086 be configured in maximum and minimum mode?	CO1	8 Marks

UNIT-II

3	a)	What are Assembler Directives? Explain any four directives used for 8086 programming with examples.	CO1	8 Marks
	b)	Write an assembly language program to find average of n numbers.	CO5	6 Marks
		(OR)		
4	a)	Explain the interrupt response sequence of 8086 with a neat sketch.	CO1	8 Marks
	b)	Explain the procedure for passing parameters to a macro.	CO1	6 Marks

UNIT-III

5	a)	Illustrate the operation of 8255 with a block diagram.	CO1	8 Marks
	b)	Explain in detail the operation of 8255 in Mode 1 configuration with an example.	CO1	6 Marks
		(OR)		
6	a)	Interface DAC with 8086 and write an assembly language program to generate a RAMP waveform.	CO5	7 Marks
	b)	Explain the interfacing of stepper motor with 8086 with a neat sketch.	CO1	7 Marks

UNIT-IV

7	a)	Explain the control words ICWs of 8259A.	CO1	7 Marks
	b)	Explain the initialization sequence of 8259A.	CO1	7 Marks
		(OR)		
8	a)	What is key de-bouncing? Show connections to interface a hexadecimal keypad to Intel 8086.	CO1	8 Marks
	b)	What is DMA data transfer? Explain different DMA data transfer schemes.	CO1	6 Marks

UNIT-V

9	a)	Write an assembly language program to count the number of even numbers in a given array of size 10 elements.	CO5	6 Marks
	b)	Explain different addressing modes used in 8051 with an example each.	CO5	8 Marks
		(OR)		
10	a)	Write an assembly language program to generate a pulse with a delay of 1msec on P2.5 using timer0 of 8051. Assume crystal frequency f =11.0592MHz.	CO1	8 Marks
	b)	Explain the bit fields of TMOD and TCON registers of 8051.	CO1	6 Marks

CODE No.: 16BT50501 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

COMPUTER NETWORKS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit.
All questions carry equal marks

UNIT-I

1	a)	What are the various principles that were applied to seven layers of OSI and List two ways in which the OSI reference model and the TCP/IP reference model are same and also list two ways in which they differ.	CO1	7 Marks
	b)	Describe fiber optic networks with figures.	CO2	7 Marks
		(OR)		
2	a)	Explain wireless networking with a base station ad hoc networking.	CO1	7 Marks
	b)	Describe Radio and Microwave Transmissions in detail.	CO2	7 Marks

UNIT-II

3	a)	Describe elementary data link protocols with examples.	CO2	7 Marks
	b)	Explain a protocol using Selective Repeat with figures.	CO2	7 Marks
		(OR)		
4	a)	Describe a protocol using Go Back N with figures.	CO2	7 Marks
	b)	Explain collision-free protocols with relevant figures.	CO2	7 Marks

UNIT-III

5	a)	Explain hierarchical routing with example of routing in a two level hierarchy with five regions.	CO4	7 Marks
	b)	Describe load shedding and jitter control in detail.	CO4	7 Marks
		(OR)		
6	a)	Explain shortest path routing with relevant figure.	CO4	7 Marks
	b)	Describe internet control message protocol and address resolution protocol.	CO4	7 Marks

UNIT-IV

7	a)	Illustrate the UDP with relevant figure.	CO1	7 Marks
	b)	Describe TCP segment header in detail.	CO1	7 Marks
		(OR)		
8	a)	Explain TCP Congestion control with example.	CO1	7 Marks
	b)	Describe window management in TCP and silly window syndrome.	CO1	7 Marks

UNIT-V

9	a)	Illustrate DNS Name space and resource records with relevant figures.	CO5	7 Marks
	b)	Describe Static web documents in detail.	CO6	7 Marks
		(OR)		
10	a)	Explain various message formats of electronic mail.	CO6	7 Marks
	b)	Draw and explain various parts of the web model.	CO6	7 Marks

CODE No.: 16BT50501 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

COMPUTER NETWORKS

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit.
All questions carry equal marks

UNIT-I

1	a)	What are the various principles that were applied to seven layers of OSI and list two ways in which the OSI reference model and the TCP/IP reference model are same and also list two ways in which they differ.	CO1	7 Marks
	b)	Describe fiber optic networks with figures.	CO2	7 Marks
		(OR)		
2	a)	Explain wireless networking with a base station ad-hoc networking.	CO1	7 Marks
	b)	Describe Radio and Microwave Transmissions in detail.	CO2	7 Marks

UNIT-II

3	a)	Describe elementary data link protocols with examples.	CO2	7 Marks
	b)	Explain a protocol using Selective Repeat with figures.	CO2	7 Marks
		(OR)		
4	a)	Describe a protocol using Go Back N with figures.	CO2	7 Marks
	b)	Explain collision-free protocols with relevant figures.	CO2	7 Marks

UNIT-III

5	a)	Explain hierarchical routing with example of routing in a two level hierarchy with five regions.	CO4	7 Marks
	b)	Describe load shedding and jitter control in detail.	CO4	7 Marks
		(OR)		
6	a)	Explain shortest path routing with relevant figure.	CO4	7 Marks
	b)	Describe Internet Control Message Protocol and Address Resolution Protocol.	CO4	7 Marks

UNIT-IV

7	a)	Illustrate the UDP with relevant figure.	CO5	7 Marks
	b)	Describe TCP segment header in detail.	CO1	7 Marks
		(OR)		
8	a)	Explain TCP congestion control with example.	CO1	7 Marks
	b)	Describe window management in TCP and silly window syndrome.	CO1	7 Marks

UNIT-V

9	a)	Illustrate DNS name space and resource records with relevant figures.	CO5	7 Marks
	b)	Describe static web documents in detail.	CO6	7 Marks
		(OR)		
10	a)	Explain various message formats of electronic mail.	CO6	7 Marks
	b)	Draw and explain various parts of the web model.	CO6	7 Marks

CODE No.: 16BT50502 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

LINUX PROGRAMMING

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit.
All questions carry equal marks

UNIT-I

1	a)	What is Compiler? Describe the 'C' Compiler with an example.	CO1	7 Marks
	b)	How to pass arguments to Linux programs? Explain with example.	CO2	7 Marks
		(OR)		
2	a)	What is the difference between getopt and getopt_long? Write and explain the structure of option.	CO1	7 Marks
	b)	Write the use of environment variables. Write a program to print values of the environment variables.	CO2	7 Marks

UNIT-II

3	a)	What is shell? Explain the redirecting commands of input and output with suitable example.	CO1	7 Marks
	b)	Write a shell script to print the reverse of a number.	CO3	7 Marks
		(OR)		
4	a)	What is the use of case command? Write syntax of case command and explain with example.	CO2	8 Marks
	b)	Explain the shift and trap commands with an example.	CO2	6 Marks

UNIT-III

5	a)	Define File? Describe the structure of File System in Linux.	CO1	7 Marks
	b)	What is system calls? Write a shell program to copy one file to another, character by character using system calls.	CO4	7 Marks
		(OR)		
6		Describe the various standard I/O library commands with example.	CO1	14 Marks

UNIT-IV

7	a)	What is a process? Describe process structure and process table.	CO1	8 Marks
	b)	Describe the system call fork with suitable example.	CO4	6 Marks
		(OR)		
8	a)	Write a filter program that reads from its standard input and writes to its standard output converting into uppercase by using shell redirection.	CO5	6 Marks
	b)	What is signal? Describe the various types of signals names defined in signal.h	CO1	8 Marks

UNIT-V

9	a)	What is pipe call? Describe implementation reading a closed pipe with an example.	CO4	7 Marks
	b)	Define FIFOs. Write a program to creating and accessing FIFOs.	CO5	7 Marks
		(OR)		
10	a)	Explain the attributes of socket and specify the address format of socket.	CO1	7 Marks
	b)	Write a socket program for server.	CO5	7 Marks

CODE No.: 16BT50503 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

COMPUTER VISION

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit.
All questions carry equal marks

UNIT-I

1	a)	Explain image formation with Pinhole perspective in detail.	CO1	8 Marks
	b)	Explain the three major phenomenons that determine the brightness of a pixel.	CO1	6 Marks
		(OR)		
2	a)	Explain in detail about color matching.	CO1	7 Marks
	b)	Discuss in detail about nonlinear color space.	CO1	7 Marks

UNIT-II

3	a)	What is Image De-noising? Explain about non local means.	CO2	7 Marks
	b)	Discuss about Synthesizing textures by sample local models.	CO2	7 Marks
		(OR)		
4	a)	Explain how to extract shape from texture.	CO2	7 Marks
	b)	Discuss about Human stereopsis.	CO2	7 Marks

UNIT-III

5	a)	Explain different Gestalt factors that lead to clustering.	CO5	7 Marks
	b)	Explain in detail about background subtraction.	CO5	7 Marks
		(OR)		
6	a)	Explain Agglomerative clustering with a graph.	CO5	8 Marks
	b)	Explain Watershed algorithm.	CO4	6 Marks

UNIT-IV

7	a)	Discuss about Bayes classifier with algorithm.	CO5	9 Marks
	b)	Explain Error rate and cross validation.	CO5	5 Marks
		(OR)		
8	a)	Discuss briefly classifying images of single objects.	CO5	7 Marks
	b)	Write short notes on Training error, Test error and Over fitting.	CO5	7 Marks

UNIT-V

9	a)	Explain about Word counts.	CO5	6 Marks
	b)	Discuss about Smoothing word counts.	CO5	8 Marks
		(OR)		
10	a)	Explain Word counts of Ranking documents.	CO5	7 Marks
	b)	Discuss the importance of object recognition system.	CO6	7 Marks

CODE No.: 16BT50504 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

DATA COMMUNICATIONS

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain about Data communication protocols.	CO1	4 Marks
	b)	Discuss the Layered network architecture used in data communication.	CO1	6 Marks
	c)	Write a short note on digital modulation.	CO2	4 Marks
		(OR)		
2	a)	What is meant by Network Topology? Explain about various network topologies. Also, give a brief description of network classification.	CO1	7 Marks
	b)	What is Electrical noise? Write in brief the most prevalent types of Electrical noise.	CO2	7 Marks

UNIT-II

3	a)	Explain in detail about the Frequency Division Multiplexing.	CO2	7 Marks
	b)	Discuss DIGITAL COMPANDING.	CO2	7 Marks
		(OR)		
4	a)	Define Pulse code modulation. Explain briefly about Pulse code modulation with suitable diagrams.	CO2	7 Marks
	b)	Define Multiplexing. Explain briefly about Time-Division Multiplexing.	CO2	7 Marks

UNIT-III

5	a)	Describe the difference between wave attenuation and wave absorption.	CO3	7 Marks
	b)	Explain in detail about subscriber loop systems.	CO2	7 Marks
		(OR)		
6	a)	List and explain the three orbital patterns used by satellites.	CO3	7 Marks
	b)	Explain in detail about Basic Telephone Call Procedures.	CO4	7 Marks

UNIT-IV

7	a)	Discuss the following terms: i) Sectoring. ii) Dualization.	CO2	4 Marks
	b)	Classify and explain Data Communication Character Codes.	CO1	10 Marks
		(OR)		
8	a)	Explain about Personal Communication System. Give its advantages and disadvantages.	CO4	7 Marks
	b)	Mention the advantages of Second-Generation Cellular Telephone Systems over First- Generation Analog Cellular Telephone systems.	CO1	7 Marks

UNIT-V

9	a)	Explain about Line control unit.	CO3	7 Marks
	b)	Explain about Asynchronous Voice-Band Modems with a neat sketch.	CO5	7 Marks
		(OR)		
10		Write a short note on ITU-T voice-band modem specifications	CO5	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

BIOMEDICAL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define resting and action potentials. Write a note on propagation of action potentials from nerve to neuromuscular junction.	CO1	8 Marks
	b)	Give the block diagram of biomedical instrumentation system.	CO1	6 Marks
		(OR)		
2		What are biochemical transducers? Write about various biochemical transducers along with their applications.	CO5	14 Marks

UNIT-II

3	a)	Write a note on electrical conduction system of heart.	CO1	7 Marks
	b)	Write about interpretation of ECG waveforms.	CO2	7 Marks
		(OR)		
4	a)	What is blood pressure? What is the relation between electrical and mechanical activities of the heart?	CO1	7 Marks
	b)	Write about Einthoven triangle.	CO2	7 Marks

UNIT-III

5	a)	What are the specifications of EEG machine?	CO1	7 Marks
	b)	Write about the interpretation of EEG.	CO2	7 Marks
		(OR)		
6		Explain the principle and working of Pneumotachograph ventilators with a neat sketch.	CO4	14 Marks

UNIT-IV

7		What is a pacemaker? What is the need for usage of cardiac pacemaker? Write about demand pacemaker.	CO5	14 Marks
		(OR)		
8		What is dialysis? Write in detail about haemodialysis.	CO5	14 Marks

UNIT-V

9		Give the block diagram of a CT scanner. Add a note on diagnostic applications of Computed Tomography.	CO3	14 Marks
		(OR)		
10		Identify the suitable process to analyze the functioning and / or blockade of blood vessels in heart and explain it.	CO5	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

INDUSTRIAL INSTRUMENTATION-II

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit.
All questions carry equal marks

UNIT-I

1	a)	Explain clearly about dew point temperature measurement.	CO1	7 Marks
	b)	Describe the working principle of vibration type densitometer.	CO1	7 Marks
		(OR)		
2	a)	Explain the construction and working principle of rotameter viscometer.	CO1	7 Marks
	b)	Define relative humidity? Discuss the humidity measurement using psychrometer.	CO1	7 Marks

UNIT-II

3	a)	A capacitive level gauge is used to measure the level of an insulating oil which has specific inductive capacitance 30 times as large as that of air, the circular tank has a diameter of 1 meter and an electrode concentrically placed has a diameter of 5cm. What would be the change in capacitance value for a level change of 1 meter?	CO4	7 Marks
	b)	Distinguish between the float type and the displacer type liquid level gauges. How is the change in the density of the liquid taken into account in these gauges? How is the measurement range limited in the float type system?	CO2	7 Marks
		(OR)		
4	a)	How is a liquid level in a boiler drum measured? How far would this value be correct? What are the difficulties associated with such measurement?	CO2	7 Marks
	b)	How optical fibre technology can be adopted for liquid level gauging? Describe a method with suitable diagrams.	CO5	7 Marks

UNIT-III

5	a)	When do you recommend hot wire anemometer to be used for flow measurement? Explain the construction and working principle of hot wire anemometer.	CO2	7 Marks
	b)	Calculate the tapper of a rotameter tube designed for 300cc/min of water flow with a float volume of 8cc and diameter 2cm. The tube length is 25cm with an inlet diameter of 2cm. The float is compensated for fluid density.	CO3	7 Marks
		(OR)		
6	a)	Describe construction and working principle of lobed impeller.	CO1	7 Marks
	b)	Give the applications of ultrasonic flow meter and explain its working with a neat sketch.	CO5	7 Marks

UNIT-IV

7	a)	Explain wheatstone bridge compensation with example.	CO1	7 Marks
	b)	With a suitable example explain current to voltage converter.	CO1	7 Marks
		(OR)		
8	a)	Suggest suitable application of charge amplifier and explain its working with a neat diagram.	CO2	7 Marks
	b)	Write a short note on charge amplifier and electrometer amplifier.	CO1	7 Marks

UNIT-V

9	a)	Where do you prefer limit switches in industries? Explain any two types of limit switches with suitable diagrams.	CO2	7 Marks
	b)	List different proximity sensor types and compare their merits and demerits.	CO1	7 Marks
		(OR)		
10	a)	Identify the role of circuit breakers in industries and explain it with a suitable example.	CO2	7 Marks
	b)	Discuss the practical guidelines for shielding with examples.	CO1	7 Marks

CODE No.: 16BT51003 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

PRINCIPLES OF COMMUNICATIONS

[Electrical and Electronics Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is the need for modulation and explain the block diagram of electrical communication systems?	CO1	7 Marks
	b)	List out the methods for generation of SSB-SC signal and explain any one of the method in detail.	CO5	7 Marks
		(OR)		
2	a)	Explain the generation of AM and drive an expression for AM wave and sketch its frequency spectrum.	CO1	7 Marks
	b)	Explain envelope detector with neat block diagram. Analyze when negative peak clipping takes place in envelope detector.	CO1	7 Marks

UNIT-II

3	a)	With block approach, explain the generation of wideband FM wave by first generating the narrow band FM wave then convert narrow band FM wave in to wide band FM wave using frequency multiplier.	CO1	10 Marks
	b)	Explain the difference between narrow band FM and wide band FM.	CO1	4 Marks
		(OR)		
4	a)	How the FM is generated using Armstrong method, explain with a neat block diagram.	CO5	7 Marks
	b)	Compare FM and PM.	CO1	7 Marks

UNIT-III

5	a)	Explain in detail about PAM and PWM in detail with neat diagrams.	CO1	7 Marks
	b)	Three signals m, m2 and m3 are to be multiplexed, m1 and m2 have a 50kHz bandwidth, and m3 has a 10KHz bandwidth. Design a commutator switching system so that each signal is sampled at its Nyquist rate.	CO3	7 Marks
		(OR)		
6	a)	Explain the operation of Time Division Multiplexing with the help of neat sketches.	CO1	7 Marks
	b)	Explain how a PPM signal can be generated from PWM signal.	CO5	7 Marks

UNIT-IV

7	a)	Explain the in detail about PCM with a neat diagram.	CO1	7 Marks
	b)	What is DM and explain how DM is better than PCM with neat diagram.	CO1	7 Marks
		(OR)		
8	a)	Explain about PSK and coherent PSK.	CO1	7 Marks
	b)	Write about FSK modulation and demodulation.	CO1	7 Marks

UNIT-V

9	a)	A discrete source emits one of five symbols once every millisecond. The symbol probabilities are 1/2, 1/4, 1/8, 1/16 and 1/16 respectively. Find the source entropy and information rate.	CO5	7 Marks
	b)	Explain the concept of amount of information and its properties.	CO5	7 Marks

(OR)

10	a)	The parity check bits of a (8, 4) block code are generated by c5 = d1+d2+d4 c6 = d1+d2+d3 c7 = d1+d3+d4 c8 = d2+d3+d4 where d1, d2, d3 and d4 are the message digits. i) Find the generator matrix and parity check matrix for this code. ii) Find the minimum weight of this code. iii) Find the error detecting capabilities of this code.	CO1	7 Marks
	b)	A DMS X has five symbols x_1, x_2, x_3, x_4 and x_5 with respective probabilities 0.2, 0.15, 0.05, 0.1 and 0.5. Construct Huffman code and calculate the code efficiency.	CO5	7 Marks

CODE No.: 16BT51004 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

COMPUTER ORGANIZATION AND ARCHITECTURE

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	List and explain the key parameters that affect the performance of a computer.	CO2	10 Marks
	b)	Explain the stepwise execution of instruction ADD LOCA, R1.	CO1	4 Marks
		(OR)		
2		Perform Division of (100010010)2 by (1101)2 using restoring and non-restoring methods. State the advantages and disadvantages of the above methods.	CO1	14 Marks

UNIT-II

3	a)	Draw a neat sketch of arithmetic logic shift unit and explain the function table.	CO6	8 Marks
	b)	Show all the basic computer register connections to the common bus.	CO3	6 Marks
		(OR)		
4		List and explain all the phases of instruction cycle with suitable examples.	CO5	14 Marks

UNIT-III

5		Draw the pin diagram of 8085 architecture and explain the importance of various pins.	CO1	14 Marks
		(OR)		
6		Explain about arithmetic, branching, control and logical instructions of 8085.	CO1	14 Marks

UNIT-IV

7	a)	With examples explain the direct, register and immediate addressing modes of 8085.	CO1	10 Marks
	b)	Write short notes on memory mapped I/O.	CO1	4 Marks
		(OR)		
8	a)	Draw a neat sketch of 8085 interfacing with memory chips.	CO1	7 Marks
	b)	Explain about address decoding and memory addresses.	CO1	7 Marks

UNIT-V

9		Define Pipelining. Describe the categories and solutions of various hazards.	CO1	14 Marks
		(OR)		
10		With an example, explain about direct, associative and set associative mapping functions.	CO4	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

SENSORS AND SIGNAL CONDITIONING

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit.
All questions carry equal marks

UNIT-I

1	a)	Classify the transducers. Briefly discuss each of them with examples.	CO1	7 Marks
	b)	Describe the constructional details of a resistive potential divider and derive the expression for its output voltage when connected across a meter of finite impedance.	CO2	7 Marks
		(OR)		
2	a)	Illustrate the constructional features, operating principle and characteristics of Thermistors. Also mention its merits and demerits over RTD.	CO1	10 Marks
	b)	A semiconductor strain gauge having a resistance of 1000Ω and a gauge factor of -133 is subjected to a compressive strain of 500 microstrain. Calculate the new value of resistance of the gauge.	CO4	4 Marks

UNIT-II

3	a)	Discuss in detail about variable gap type capacitive sensors. How variation of capacitance with gap can be linearized?	CO2	6 Marks
	b)	Illustrate the operation of Hall effect sensors. List its applications.	CO1	8 Marks
		(OR)		
4		Explain the operation of any two types of Electromagnetic transducers used for linear and angular velocity measurements.	CO5	14 Marks

UNIT-III

5	a)	State and explain the laws of thermocouples in detail.	CO6	7 Marks
	b)	What is piezoelectric effect? Derive expression for voltage sensitivity and charge sensitivity of piezoelectric crystal.	CO2	7 Marks
		(OR)		
6		Write a short notes on: i) Photoelectric sensors. ii) Magneto-strictive sensors.	CO1	14 Marks

UNIT-IV

7	a)	Explain the principle and operation of semi conductor sensors in detail.	CO1	7 Marks
	b)	Compare the operation merits and demerits of shaft and optical encoders.	CO2	7 Marks
		(OR)		
8	a)	Discuss in detail about smart sensors.	CO1	7 Marks
	b)	Differentiate between the fabrication of thin and thick film sensors.	CO6	7 Marks

UNIT-V

9		List the features of Instrumentation amplifier and how the superimposed noise signals are suppressed by the Instrumentation amplifier for transmission of sensor output from field location to control room in industry.	CO6	14 Marks
		(OR)		
10		With neat diagrams, design Push pull and Blumein bridges in signal conditioning circuits for relevant applications.	CO3	14 Marks

CODE No.: 16BT51201 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

COMPUTER GRAPHICS AND MULTIMEDIA

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit.
All questions carry equal marks

UNIT-I

1		Explain in detail about ellipse drawing algorithms.	CO1	14 Marks
		(OR)		
2		What is filling? Explain Boundary fill and Flood fill algorithms.	CO1	14 Marks

UNIT-II

3		Explain Sutherland-Hodgeman Polygon Clipping algorithm in detail.	CO1	14 Marks
		(OR)		
4		Describe 2D geometrical transforms with mathematical equations.	CO4	14 Marks

UNIT-III

5		Describe in detail about B-Spline curves and surfaces.	CO3	14 Marks
		(OR)		
6		Describe in detail about Hermit and Bezier curves.	CO3	14 Marks

UNIT-IV

7	a)	Define the terms multimedia and hypermedia.	CO5	7 Marks
	b)	Explain about multimedia software tools.	CO5	7 Marks
		(OR)		
8	a)	Describe in detail about color models in Images.	CO2	7 Marks
	b)	Describe in detail about color models in Video.	CO2	7 Marks

UNIT-V

9		Illustrate dictionary based coding with example.	CO4	14 Marks
		(OR)		
10		Describe video compression based on motion compensation.	CO5	14 Marks

CODE No.: 16BT51202 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

OBJECT ORIENTED ANALYSIS AND DESIGN

[Computer Science and Engineering, Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit.
All questions carry equal marks

UNIT-I

1	a)	Discuss the qualities of Object-Oriented techniques.	CO1	2 Marks
	b)	Discuss the role of analysis in the software lifecycle of unified software development process.	CO1	12 Marks
		(OR)		
2	a)	What is Unified Process Model? Explain the iterations, outcomes and workflow in Unified Process Model with neat diagram.	CO1	7 Marks
	b)	Discuss different goals of UML.	CO1	7 Marks

UNIT-II

3	a)	Construct the class diagram for the people with in the university provide a person class-A person may be a citizen foreigner male or female. Each person may play the role of a student or employee. Employee can be professor or registrar. Student may be a undergraduate, master student or Ph.D student.	CO2	7 Marks
	b)	Analyze and explain how to control the visibility of elements present in package.	CO2	7 Marks
		(OR)		
4	a)	Implement the class and object diagrams for Safe Home Software System.	CO1	7 Marks
	b)	Define generalization and aggregation. Describe in detail how sub-super class relation and aggregation can be identified in a project.	CO2	7 Marks

UNIT-III

5	a)	The goal of Analysis model is to develop a model of what of the system will do? Draw Analysis model for Banking System.	CO3	7 Marks
	b)	Draw use case diagram for online shopping.	CO3	7 Marks
		(OR)		
6	a)	Consider “buy tickets” use case in a railway reservation system. Draw a sequence diagram. Explain briefly.	CO3	7 Marks
	b)	Design collaboration diagram for online passport system.	CO3	7 Marks

UNIT-IV

7	a)	What is the role of Swim lanes and Guard condition in Activity diagram?	CO4	7 Marks
	b)	Develop the state chart diagram for the deposit checking of the Bank System.	CO4	7 Marks
		(OR)		

8		Construct the state chart diagram, following the given problem. Consider an airline company has employees. A team builds an airplane Which has number of components. An airplane lands and takes off from a source to destination. An airplane is managed by a captain and co-pilet along with his cabin crew consisting of airhostess and attendants.	CO4	14 Marks

UNIT-V

9	a)	Design deployment diagram for client server processing.	CO5	7 Marks
	b)	Design and apply modeling techniques of component diagram for home automation system.	CO5	7 Marks

(OR)

10	a)	Explain about the modeling executable files and libraries and tables, files and documents.	CO5	7 Marks
	b)	Construct the implementation diagrams for student attendance monitoring system.	CO5	7 Marks

CODE No.: 16BT51203 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

WEB TECHNOLOGIES

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write HTML code to display your class time table using table tags	CO1	7 Marks
	b)	Explain the following HTML tags with suitable example. i) ** ii) <a>** ii) **<article>** iii) **<video>**	CO1	7 Marks
		(OR)		
2	a)	Design an employee registration HTML page for a Job portal website.	CO1	7 Marks
	b)	Explain how to make an image as Hyperlink with example.	CO1	7 Marks

UNIT-II

3	a)	Outline the following CSS Selectors with example. i) Class selector. ii) Id selector. iii) Pseudo selector.	CO5	7 Marks
	b)	Design a webpage that display 'mobile number' field and verify the entered mobile number is valid or not using *Javascript*.	CO4, CO6	7 Marks
		(OR)		
4	a)	Explain how an external stylesheet can be linked to HTML page.	CO5	7 Marks
	b)	Develop a web page which prompts for Celsius Temperature and Converts it into Fahrenheit and display on the HTML page using *Javascript*. (To convert temperature in degrees Celsius to Fahrenheit, multiply by 9/5 and add 32)	CO4, CO6	7 Marks

UNIT-III

5	a)	What are the differences between traditional web application and AJAX based web application?	CO2, CO5	7 Marks
	b)	Design a Feedback from web page using the grid system of bootstrap.	CO5	7 Marks
		(OR)		
6	a)	Explain working mechanism of AJAX with suitable example.	CO2	7 Marks
	b)	What is a responsive lay out and how to create it using Bootstrap.	CO5	7 Marks

UNIT-IV

7	a)	Write a PHP program to print sum of digits of a given number.	CO6	7 Marks
	b)	Design a PHP program with the following specifications. Class: Book Attributes: Title, Author, Price Constuctor: To initialize Book class MemberFunction: To Display book Details Create Object of Book class and print book details.	CO5	7 Marks
		(OR)		
8	a)	Write a PHP program to find out the given string is a palindrome or not.	CO6	7 Marks
	b)	Discuss various types of control statements in PHP.	CO5	7 Marks

UNIT-V

9	a)	What are cookies? How can you create, access and delete a cookie in PHP with the help of an example.	CO3, CO6	7 Marks
	b)	Design a web page which takes Students details into the database using PHP. (Note: Student details contains the following: regdno, name, email, branch, cgpa).	CO3, CO6	7 Marks

(OR)

10	a)	How the result set of Mysql be handled in PHP.	CO6	7 Marks
	b)	Design a PHP page which takes the complaint number as input and display the complaint particulars. (Note: Complaint particulars contains: Complaint number, description, dateofbooking, email,mobile).	CO3, CO6	7 Marks

CODE No.: 16BT51241 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

OBJECT ORIENTED PROGRAMMING

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the features of java that supports object oriented programming? Discuss in brief.	CO1	6 Marks
	b)	What is overloading? Write a Java program to find the maximum number of two integer values, two double values and three double values by using method overloading mechanism.	CO1	8 Marks
		(OR)		
2	a)	Explain about java control statements with Examples. Write a Java program that reads an unspecified number of integers, determines how many positive and negative values have been read, and computes the total and average of the input values (not counting zeros). Your program ends with the input 0. Display the average as a floating-point number.	CO2	8 Marks
	b)	Write a Java program to find the maximum number of two integer values, two double values and three double values by using method overloading mechanism.	CO2	6 Marks

UNIT-II

3	a)	Discuss about final keyword usage in inheritance and write a Java program to demonstrate usage of it.	CO3	7 Marks
	b)	What are packages? Write the advantage creating packages in program.	CO3	7 Marks
		(OR)		
4	a)	What is the difference between class, abstract class and interface?	CO2	7 Marks
	b)	What are the different forms of inheritance? Explain.	CO2	7 Marks

UNIT-III

5	a)	Explain about Exception Handling in Java with examples in detail.	CO2	7 Marks
	b)	Write a Java program to create a thread by extending Thread class. Define a job for child thread to print a message “child thread” for 10 times. Define a job for main thread to print a message “main thread” for 10 times. Create a class Thread Demo define main method in this class create child thread form this class.	CO3	7 Marks
		(OR)		
6	a)	Differentiate between multithreading and multitasking.	CO3	7 Marks
	b)	What is the role of ‘finally’ in exception handling? Explain with an example.	CO3	7 Marks

UNIT-IV

7	a)	Write a note on dialog box usage in user interfaces.	CO4	6 Marks
	b)	What is the significance of Layout managers? Discuss briefly various layout managers.	CO4	8 Marks

(OR)

8	a)	Explain about the components and containers of AWT.	CO4	8 Marks
	b)	What is an Applet? List out different types of Applet.	CO4	6 Marks

UNIT-V

9	a)	Develop the event handler for the Action event.	CO2	7 Marks
	b)	Explain how client and server are involved in web application.	CO5	7 Marks

(OR)

10	a)	How to use Tomcat for server development?	CO5	7 Marks
	b)	Discuss about JavaX.Servlet package.	CO4	7 Marks

CODE No.: 16BT51501 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

COMPILER DESIGN

[Information Technology, Computer Science and System Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write the differences between Compiler and Interpreter.	CO1	7 Marks
	b)	Explain the cousins of a Compiler.	CO1	7 Marks
		(OR)		
2	a)	Define input buffering. Explain input buffering scheme employed by the lexical analyzer with an example.	CO5	7 Marks
	b)	Explain compiler construction tools with examples.	CO1	7 Marks

UNIT-II

3	a)	Explain the role of a Parser with neat sketch.	CO3	7 Marks
	b)	Construct LALR parser for the following grammar G.	CO3	7 Marks
		E → E + T / T , T → T * F / F, F → (E) / id		
		(OR)		
4	a)	Explain briefly Recursive Descent Parser with an example.	CO3	7 Marks
	b)	Verify whether the following grammar is LL(1) Grammar or not.	CO3	7 Marks
		S → iEtS / iEtSeS / a		
		E → b		

UNIT-III

5	a)	Define synthesized and inherited attributes. Give syntax directed definition for construction of assignment statements.	CO4	7 Marks
	b)	Discuss about S-attribute and L-attribute with examples.	CO4	7 Marks
		(OR)		
6	a)	Explain the rules for type checking with an example.	CO4	7 Marks
	b)	What are the differences between static and dynamic type checker.	CO4	7 Marks

UNIT-IV

7	a)	Explain pre-processing of expressions.	CO6	7 Marks
	b)	Write the Intermediate code for flow of control statements.	CO6	7 Marks
		(OR)		
8	a)	Explain different types of three address code and explain to implement the three address statements with an example.	CO6	7 Marks
	b)	Translate the expression **–(a+b)*(c-d)*(d/e)** in to quadruples and triples.	CO6	7 Marks

UNIT-V

9	a)	What is basic block? Explain the optimization of basic blocks.	CO1	7 Marks
	b)	Write a short note on the principle sources of optimization.	CO1	7 Marks
		(OR)		
10	a)	Write the design issues of a code generator.	CO2	7 Marks
	b)	Explain Register allocation and assignment with an example.	CO2	7 Marks

CODE No.: 16BT51502 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

SYSTEM SOFTWARE

[Computer Science and System Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit.
All questions carry equal marks

		UNIT-I		
1	a)	Describe briefly about the Unix architecture and explain the role played by the kernel and shell in sharing the workload.	CO1	7 Marks
	b)	What are the features of UNIX? Explain.	CO1	7 Marks
		(OR)		
2	a)	In what way is mailx command superior to GUI program like Netscape or Mozilla? Explain.	CO2	7 Marks
	b)	Write general syntax of the following UNIX commands with example. i) **cat**. ii) **ls**. iii) **cp**.	CO1	7 Marks
		UNIT-II		
3	a)	Describe the UNIX file stem administration.	CO1	8 Marks
	b)	Write an algorithm for reading a file.	CO1	6 Marks
		(OR)		
4	a)	Define pipe? Describe the categories of pipes and write a program to reading and writing a pipe.	CO2	8 Marks
	b)	Write a program to Unlinking an opened file.	CO2	6 Marks
		UNIT-III		
5	a)	Describe the components of the context of a process.	CO2	7 Marks
	b)	What is interrupt? How to handle interrupts? Explain with an example.	CO3	7 Marks
		(OR)		
6	a)	Design an algorithm for allocating and freeing memory pages and page tables.	CO3	8 Marks
	b)	Describe the sleep and wakeup process.	CO3	6 Marks
		UNIT-IV		
7	a)	How to create a new process in UNIX? Explain the sequence of operations for fork.	CO2	8 Marks
	b)	Write an algorithm for Handling signals in UNIX.	CO4	6 Marks
		(OR)		
8	a)	Describe the implementation of a kill system call.	CO4	6 Marks
	b)	Write an algorithm for Init process and explain.	CO4	8 Marks
		UNIT-V		
9	a)	Describe about TCP/IP.	CO5	7 Marks
	b)	Explain about File Transfer protocol.	CO5	7 Marks
		(OR)		
10	a)	Explain the standard file systems and their types.	CO5	7 Marks
	b)	What is fsck in UNIX? Explain.	CO1	7 Marks

CODE No.: 16BT51503 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

INTELLIGENT COMPUTING SYSTEMS

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define Artificial Intelligence. Explain the techniques of Artificial Intelligence. Also describe the characteristics of Artificial Intelligence.	CO1	7 Marks
	b)	Write a short report on various applications in the field of Artificial Intelligence.	CO1	7 Marks
		(OR)		
2	a)	Describe in detail on the characteristics and applications of learning agents.	CO3	7 Marks
	b)	List the characteristics of intelligent agent and explain in detail.	CO3	7 Marks

UNIT-II

3	a)	What is meant by search strategy? What are the types of search strategies? Explain them in detail.	CO2	7 Marks
	b)	Define Heuristic search. What are the advantages of Heuristic search?	CO2	7 Marks
		(OR)		
4	a)	Describe the problem formulation steps with example.	CO3	7 Marks
	b)	Explain the following uninformed search strategies with examples. i) Breadth First Search. ii) Depth First Search.	CO2	7 Marks

UNIT-III

5	a)	Write short note about the following for propositional logic i) Syntax. ii) Semantic. iii) Inference.	CO3	7 Marks
	b)	What is wumpus world? Explain with an example acting and reasoning on the wumpus world.	CO3	7 Marks
		(OR)		
6	a)	Convert the following sentences to First-order logic: i) Marcus was a man. ii) Marcus was a Roman. iii) All men are people. iv) Caesar was a ruler.	CO4	7 Marks
	b)	Briefly describe the following in terms of propositional logic. i) Forward chaining. ii) Backward chaining.	CO4	7 Marks

UNIT-IV

7	a)	Explain the role of categories and objects in knowledge representation.	CO4	7 Marks
	b)	Explain in detail about mental events and mental objects.	CO4	7 Marks
		(OR)		
8	a)	Explain about reasoning with default information.	CO6	7 Marks
	b)	Explain about the inference using full joint distributions.	CO6	7 Marks

UNIT-V

9	a)	Explain about learning from observations and forms of learning in detail.	CO5	7 Marks
	b)	Discuss in detail about ensemble learning with example.	CO5	7 Marks
		(OR)		
10	a)	Define inductive learning. How statistical learning method differs from reinforcement learning method.	CO5	7 Marks
	b)	Describe genetic algorithm. Explain how to use evolutionary computation principals in genetic algorithm.	CO5	7 Marks

CODE No.: 16BT51541 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

MODELING AND SIMULATION

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is Simulation? List and explain the steps in simulation study.	CO1	6 Marks
	b)	Define the following: i) System. ii) Entity. iii) Activity. iv) State.	CO1	8 Marks
		(OR)		
2		Explain about discrete event simulation in detail.	CO1	14 Marks

UNIT-II

3	a)	Briefly explain the various probability terminologies and concepts.	CO2	7 Marks
	b)	What is Poisson process? Mention the properties of Poisson process.	CO2	7 Marks
		(OR)		
4		Six dump trucks are used to haul coal from entrance of a small mine to the rail road. Each truck is loaded by one of the two loaders. After loading, truck immediately moves to the scale to be weighed as soon as possible. Both loaders and scale have FCFS for trucks. Travel time from loader to scale is negligible. After being weighed, a truck begins a travel time and then returns to loader queue. Simulate for clock = 20. Find average loader utilization and average scale utilization. The activity times arc given in the following table:	CO4	14 Marks

Loading Time	10	5	5	10	15	10	10
Weighing Time	12	12	12	16	12	16	
Traveling time	60	100	40	40	80		

UNIT-III

5	a)	Explain in detail the characteristics of queuing system.	CO2	8 Marks
	b)	List and explain different queuing notations.	CO2	6 Marks
		(OR)		
6	a)	Explain any two long-run measures of performance of queuing systems.	CO2	7 Marks
	b)	Explain about Networks of queues.	CO2	7 Marks

UNIT-IV

7		Consider the grocery store with one checkout counter. Prepare the simulation table for eight customers and find out average waiting time of customer in queue, idle time of server and average service time. The Inter Arrival Time (IAT) and Service Time (ST) are given in minutes. IAT : 3, 2, 6, 4, 4, 5, 8 ST (min) : 3, 5, 5, 8, 4, 6, 2, 3 Assume first customer arrives at t = 0	CO4	14 Marks

(OR)

8	a)	Explain inverse-transform technique of producing random variates for exponential distribution.	CO3	3 Marks
	b)	Generate three Poison variates with mean $\alpha = 0.2$.	CO3	4 Marks
	c)	Explain the types of simulation with respect to output analysis with example.	CO3	7 Marks

UNIT-V

9	a)	Differentiate between terminating or transient simulation and steady state simulation with examples.	CO6	7 Marks
	b)	Briefly explain the measure of performance of a simulation system.	CO6	7 Marks

(OR)

10	a)	Explain model building, verification and validation with a neat diagram.	CO6	7 Marks
	b)	Explain any two output analysis for steady-state simulations.	CO6	7 Marks

CODE No.: 16BT60402 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

DIGITAL SIGNAL PROCESSING

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the classification of discrete time signals and systems.	CO1	8 Marks
	b)	Determine if the system described by the following equation are causal or non-causal, time-variant or not i) $y(n) = x(n) + \frac{1}{x(n-1)}$ ii) $y(n) = x(n^2)$	CO1	6 Marks

(OR)

2	a)	Determine the impulse response h(n) for the $y(n)+y(n-1)-2y(n-2) = x(n-1) + 2x(n-2)$ system described by difference equation.	CO1	8 Marks
	b)	State and prove the conditions for causality and stability of an LTI system.	CO1	6 Marks

UNIT-II

3	a)	Compute DFT of the sequence x(n)={1, 2, 3, 4, 4, 3, 2, 1} using DITFFT algorithm.	CO2	8 Marks
	b)	State and prove following properties of DFT. i) Circular shifting. ii) Time reversal. iii) Complex conjugate.	CO1	6 Marks

(OR)

4	a)	Develop an 8-point DIF-FFT algorithm. Draw the signal flow graph. Determine the DFT of the sequence $x(n)=\{1, 1, 1, 0, 0, 1, 1, 1\}$.	CO1	8 Marks
	b)	Explain about decimation infrequency FFT algorithm.	CO1	6 Marks

UNIT-III

5	a)	Describe the IIR filter design approximation using Bilinear Transformation method. Also sketchthe s-plane to z-plane mapping. State its merits and demerits.	CO4	8 Marks
	b)	Realise the following discrete system using; i) Cascade forms. ii) Parallel forms. $y(n) = -0.1y(n-1) + 0.2y(n-2) + 3x(n) + 3.6x(n-1) + 0.6x(n-2)$	CO4	6 Marks

(OR)

6	a)	What is aliasing problem in Impulse Invariant Method of designing digital filters? Why is it absent in Bilinear Transformation?	CO3	7 Marks
	b)	Derive the relationship between Analog and Digital filter poles and frequencies in Impulse-Invariant method.	CO3	7 Marks

UNIT-IV

7	a)	Compare IIR and FIR filters.	CO1	6 Marks
	b)	Desired frequency response of HPF is given by	CO5	8 Marks

$$H_d(e^{j\omega}) = e^{-j34} \qquad \omega_c \le |\omega| \le \pi$$

$$0 \qquad |\omega| \le \omega_c$$

Design a linear phase FIR filter using Hamming Window for M = 7 and ω_c = 2rad/sample.

(OR)

8	a)	Explain the design procedure of filters using windowing technique.	CO1	6 Marks
	b)	Design a linear phase FIR high pass filter using Hamming window with a cut off frequencies ω_c-0.8πrad/sample and N=7.	CO5	8 Marks

UNIT-V

9	a)	Discuss in detail about pipelining concept.	CO1	7 Marks
	b)	Explain about special addressing modes in detail.	CO1	7 Marks

(OR)

10		With neat diagram, explain the architecture of TMS 320C6X.	CO1	14 Marks

CODE No.: 16BT60404 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

IMAGE PROCESSING

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Discuss in detail about:		
		i) Image sampling.	CO1	7 Marks
		ii) Quantization.	CO1	7 Marks
		(OR)		
2		Discuss the properties and applications of :		
		i) Hadamard transform.	CO3	7 Marks
		ii) Discrete Cosine Transforms.	CO3	7 Marks

UNIT-II

3	a)	Outline the concept of Histogram processing, Histogram equalization and Histogram specifications with necessary equations	CO4	6 Marks
	b)	Differentiate the filtering process between spatial domain and frequency domain.	CO2	8 Marks
		(OR)		
4	a)	Distinguish smoothing filters and sharpening filters in spatial domain.	CO2	7 Marks
	b)	Discuss how image averaging reduces the noise in images.	CO1	7 Marks

UNIT-III

5	a)	Outline the concept of Adaptive Median filter algorithm.	CO2	8 Marks
	b)	Illustrate how periodic noise reduced in frequency domain by using Notch filter.	CO4	6 Marks
		(OR)		
6	a)	Explain how Adaptive filters are used for restoration in the presence of noise only.	CO1	7 Marks
	b)	Illustrate the following: i) Gaussian noise. ii) Rayleigh noise. iii) Gamma noise.	CO1	7 Marks

UNIT-IV

7	a)	Write short notes on Arithmetic coding in image compression.	CO2	8 Marks
	b)	Discuss the concept of variable-length coding in detail.	CO3	6 Marks
		(OR)		
8		Describe in detail image compression models with the help of block diagram.	CO3	14 Marks

UNIT-V

9	a)	Explain the concept of edge based segmentation in detail.	CO1	7 Marks
	b)	Write a short notes on: i) Point detection. ii) Line detection. iii) Edge detection.	CO2	7 Marks
		(OR)		
10	a)	Explain algorithm to obtain threshold automatically.	CO3	7 Marks
	b)	Describe Pseudo colour image processing in detail.	CO1	7 Marks

CODE No.: 16BT60503 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Regular Examinations November - 2018

WIRELESS NETWORKS

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit.
All questions carry equal marks

UNIT-I

1	a)	Discuss about generations of wireless networks.	CO1	7 Marks
	b)	Explain about CDMA with one example.	CO1	7 Marks
		(OR)		
2	a)	Discuss various access methods for wireless LANs.	CO1	7 Marks
	b)	Explain integration of voice and data traffic with one example.	CO1	7 Marks

UNIT-II

3	a)	Illustrate different ad-hoc network topologies.	CO2	7 Marks
	b)	Elaborate mobility, location and hand off with example.	CO2	7 Marks
		(OR)		
4	a)	Discuss various security identification schemes.	CO2	8 Marks
	b)	Explain about cellular hierarchy	CO2	6 Marks

UNIT-III

5	a)	Discuss about needs and technologies of home access networks.	CO3	7 Marks
	b)	Draw and explain general MAC frame format.	CO3	7 Marks
		(OR)		
6	a)	Explain about IEEE802.11a in detail.	CO3	7 Marks
	b)	Write about wireless home networking.	CO5	7 Marks

UNIT-IV

7	a)	Discuss in detail about Wireless Application Protocol.	CO5	7 Marks
	b)	Elaborate various protocol layers in GPRS.	CO5	7 Marks
		(OR)		
8	a)	Discuss packet and frame formats of IS-95.	CO5	7 Marks
	b)	Discuss about GSM reference architecture.	CO5	7 Marks

UNIT-V

9	a)	Discuss about wireless ATM reference model.	CO1	7 Marks
	b)	Discuss in detail about Bluetooth technology.	CO5	7 Marks
		(OR)		
10	a)	Explain about IEEE802.15 WPAN.	CO3	6 Marks
	b)	Discuss in detail about HIPERLAN-2.	CO1	8 Marks

CODE No.: 16BT3HS02 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

MANAGERIAL ECONOMICS AND PRINCIPLES OF ACCOUNTANCY

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	Evaluate utility and significance of Managerial Economics.	CO1	14 Marks
	(OR)		
2	State "Law of Demand". Explain assumptions of law of demand and changes in demand with graphs.	CO3	14 Marks

UNIT-II

3	Critically examine the importance of cost concepts in general and short-run costs specifically.	CO3, CO3	14 Marks
	(OR)		
4	Discuss the following in Break Even Analysis. i) Underlying Assumptions. ii) Merits. iii) Demerits.	CO1	14 Marks

UNIT-III

5	Which market has P=AR=MR as it's characteristic feature? Illustrate with example.	CO3	14 Marks
	(OR)		
6	Discuss the following. i) Objectives of Pricing. ii) Overpricing and Under pricing. iii) Pricing Policy.	CO1	14 Marks

UNIT-IV

7	Explain with suitable examples. i) Types of accounts. ii) Principles of accounts.	CO1	14 Marks
	(OR)		
8	From the following transactions pass necessary Journal entries in the Mahankali for the month October 2016. Oct. 1 Mahankali commenced a business with Cash Rs. 26,000; B/R Rs. 14,000; Motor Vehicles Rs. 40,000; B/P Rs. 10,000; Creditors Rs. 20,000. Oct. 5 Bought goods from Kali Rs. 36,400. Oct. 9 Cash Paid to Kali Rs. 36,000 in full settlement of his account. Oct. 16 Sold goods to Bhadrakali Rs. 44,600. Oct. 25 Cash received from Bhadrakali Rs.44,000 in full settlement of her account. Oct. 31 Salaries paid through cheque Rs. 16,800.	CO2, CO5, CO6	14 Marks

UNIT-V

9 Define Balance Sheet. Elucidate various elements of balance sheet. CO1 14 Marks

(OR)

10 From the following balances of accounts in the books of M/s Kavitha, prepare Trading, Profit and loss account for the year ending March31, 2008 and also prepare balance sheet as on that date taking into account the following CO4, CO5, CO6 14 Marks

Particulars	Amount	Particulars	Amount
Capital	450,000	Salaries	75,000
Sales	1,000,000	Commission (Dr)	15,000
Purchases	400,000	Interest (Dr)	10,000
Sales Returns	10,000	Gas, Water and Power	30,000
Purchases returns	15,000	Loan form HARS	50,000
Creditors	200,000	Bills Receivable	120,000
Debtors	300,000	Bills Payable	25,000
Opening Stock	90,000	Electricity	16,000
Machinery	600,000	Wages	14,000
Furniture	100,000	Commission (Cr)	40,000

Adjustments:

i) Prepaid salaries Rs.2,000.
ii) Commission yet to be received Rs.4,000.
iii) Write off bad debts Rs.3000.
iv) Closing stock Rs.2,00,000.
v) Charge depreciation @ 10% on machinery
@ 15 % on furniture.

CODE No.: 16BT5HS01 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

MANAGEMENT SCIENCE

[Computer Science and Engineering, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the contributions of F.W. Taylor to the evolution of management thoughts.	CO1	7 Marks
	b)	Discuss the managerial skills which bring out effective management.	CO1	7 Marks

(OR)

2		State the different types of organizations. Explain any three of them stating their advantages, disadvantages.	CO3	14 Marks

UNIT-II

3	a)	Write the objectives of materials management.	CO1	5 Marks
	b)	List the assumptions and costs involved in E.O.Q. model and derive an expression for Economic Order Quantity.	CO4	9 Marks

(OR)

4		In a production process a lot of 250 products have been manufactured in a day. Five samples have been collected at random in a day as a SQC measure. Each sample size is 5. Five samples A, B, C, D and E are shown in the table for a particular dimension of the product.	CO4	14 Marks

A	43,42,42,44,43	D	43,42,40,40,46
B	45,40,39,39,46	E	40,41,43,46,43
C	40,40,41,42,43		

Calculate control limits and plot X bar and R charts.

UNIT-III

5	a)	Discuss the role of HR Manager in an organization.	CO1	10 Marks
	b)	What are the different sources of recruitment process?	CO1	4 Marks

(OR)

6	a)	What is Herzberg's two factor theory of motivation and differentiate it from Maslow's theory of need hierarchy.	CO2	7 Marks
	b)	Define merit rating. Explain the importance and objectives of merit rating.	CO1	7 Marks

UNIT-IV

7	a)	Define Entrepreneurship and briefly explain characteristics of it.	CO1	7 Marks
	b)	Write short notes on "social responsibilities" of an entrepreneur.	CO5	7 Marks

(OR)

8 a) What is Float? State the different types of floats. CO1 4 Marks

b) The time and cost estimates of a project and their precedence relationship are given below: CO4 10 Marks

Activity	Proceeding Activity	Time in weeks		Cost(Rs)	
		Normal	Crash	Normal	Crash
A	-	6	4	10,000	14,000
B	-	4	3	5,000	8,000
C	A	3	2	4,000	5,000
D	B	8	3	1000	6000
E	B	14	6	9000	13,000
F	C,D	18	4	7,000	8,000

Overhead costs Rs. 1000 per week.

It is stipulated that the contractor will have to pay a penalty of Rs. 2000 per week for completing the project beyond 12 weeks. Determine the project duration corresponding to minimum costs.

UNIT-V

9 a) Explain the importance of managing the marketing and logistics interface on an integrated basis in a supply chain. CO2 7 Marks

b) What is ERP? Explain its component subsystems. CO6 7 Marks

(OR)

10 a) In what way the process of maintenance will be useful in an organization? CO2 7 Marks

b) Discuss in detail the types of maintenance. CO1 7 Marks

CODE No.: 16BT5HS02 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

COSTING AND FINANCE MANAGEMENT FOR CIVIL ENGINEERS

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Compare and contrast between preliminary and approximate estimation. CO2 14 Marks

(OR)

2 Elucidate the cost plan inclusions. CO1, CO4 14 Marks

UNIT-II

3 Surya Construction Ltd., with a paid up share capital of Rs.50 lacs undertook a contract to construct MIG apartments. The work commenced on the contract on 1st April 2000. The contract price was Rs.60 lacs. Cash received on account of the contract upto 31st March, 2001 was Rs.18 lacs (being 90% of the work certified). Work completed but not certified was estimated at Rs.1,00,000. As on 31st March 2001 material at site was estimated at Rs.30,000, machinery at site costing Rs.2,00,000 was returned to stores and wages outstanding were Rs.5,000, Plant and Machinery at site is to be depreciated at 5%. Prepare the contract account and balance shee.t CO1, CO4 14 Marks

The following were the ledger balances (Dr.) as per trial balance as on 31st March, 2001:

	Rs.
Land and Building	23,00,000
Plant and Machinery (60% at site)	25,00,000
Furniture	60,000
Materials	14,00,000
Fuel and Power	1,25,000
Site expenses	5,000
Office expenses	12,000
Rates and taxes	15,000
Cash at bank	1,33,000
Wages	2,50,000

(OR)

4 Elaborate the Cost-plus contract. CO2 14 Marks

UNIT-III

5 List and explain different types of budgets. How does classification of budgets help to operate budgetary control technique efficiently and effectively? CO1, CO3 14 Marks

(OR)

6 Define the term ‘budget’ as used in cost accounting, and enlist the essentials of “budgetary control’ CO1 14 Marks

UNIT-IV

7 How are capital and depreciation treated for tax purpose? CO2, CO3 14 Marks

(OR)

8 From the following details relating to the two projects A and B, suggest which one is to be accepted under NPV method. CO3, CO4 14 Marks

	Project A (Rs.)	Project B (Rs.)
Estimated cost	2,00,000	3,00,000
Estimated life (years)	5 years	6 years
Estimated scrap	50,000	60,000
Annual income after tax and depreciation		
Year – 1	1,00,000	1,20,000
2	1,00,000	90,000
3	80,000	90,000
4	60,000	65,000
5	50,000	50,000
6	NIL	40,000

An uplink is required in the case of proposal A at the end of the 2nd year amount to Rs.25,000 and charge depreciation as per straight line method. The company expects a return of 10%.

UNIT-V

9 Compare and contrast Accrued Expenses *Vs* Differed Income. CO3, CO4 14 Marks

(OR)

10 Describe the role of commercial banks in working capital financing. CO1 14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

PYTHON PROGRAMMING

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define variable. Explain different variable initializations.	CO1	7 Marks
	b)	Elaborate how input can be accepted by the user and display the output on the console screen.	CO4	7 Marks
		(OR)		
2	a)	Write a short notes on: i) Implicit line joining. ii) Explicit line joining.	CO2	7 Marks
	b)	Write a python script to calculate factorial of given number.	CO5	7 Marks

UNIT-II

3		Write a python script to print fallowing pattern. 1 1 1 1 1 1 1 1 1 1 1 1	CO2	14 Marks
		(OR)		
4	a)	Outline operator precedence and Boolean expressions.	CO2	7 Marks
	b)	Explain Set data types in Python.	CO1	7 Marks

UNIT-III

5	a)	Write a program segment that opens and reads a text file and displays how many lines of text are in the file.	CO5	7 Marks
	b)	Implement Towers of Hanoi problem using Recursion.	CO3	7 Marks
		(OR)		
6		Determine how many digits a positive integer has by repeatedly dividing by 10 (without keeping the remainder) until the number is less than 10, consisting of only 1 digit. We add 1 to this value for each time we divided by 10. Here is the recursive algorithm: i) If n < 10 return 1. ii) Otherwise, return 1 + the number of digits in n/10 (ignoring the fractional part). Implement this recursive algorithm in Python and test it using a main function that calls this with the values 15, 105, and 15105. (HINT: Remember that if n is an integer, n/10 will be an integer without the fractional part.)	CO5	14 Marks

UNIT-IV

7		Explain the use of polymorphism with an example program.	CO1	14 Marks
		(OR)		
8		List various types of Inheritance in python with an example program.	CO4	14 Marks

UNIT-V

9	a)	Write a brief note on structure of tkinter package.	CO1	7 Marks
	b)	How to add multiple widgets in tkinter? Explain with an example.	CO3	7 Marks
		(OR)		
10	a)	Illustrate the concept of scales in GUI programming in Python.	CO1	7 Marks
	b)	Elaborate tkinter coding alternatives with an example.	CO3	7 Marks

CODE No.: 16BT40406 SVEC-16 (RA)

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

PULSE AND DIGITAL CIRCUITS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

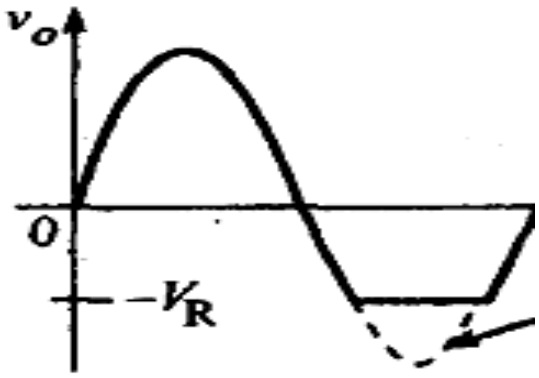
1	a)	Describe the operation of RC High Pass circuit when it is excited by Ramp input with aid of neat sketches.	CO1	7 Marks
	b)	Apply appropriate technique on a simple RC circuit to convert a square wave to periodical ramp signal.	CO5	7 Marks

(OR)

2	a)	Explain the operation of RC Low Pass circuit when it is excited by Ramp input with the help of neat sketches.	CO1	8 Marks
	b)	Apply appropriate technique on a simple RC circuit to convert square Signal to Spikes.	CO5	6 Marks

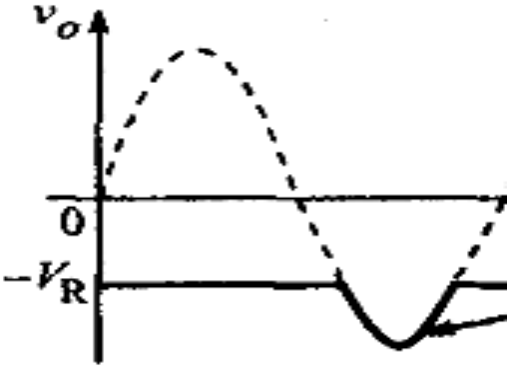
UNIT-II

3	a)	Discuss briefly about effect of diode characteristics on clamping voltage.	CO1	7 Marks
	b)	Design a shunt clipper circuit that produces a following waveform. Assuming that input applied voltage is 50V (P-P), V_R= -10V and assume Diode is Ideal.	CO3	7 Marks



(OR)

4	a)	Explain in detail about practical clamping circuit with aid of neat sketches.	CO1	7 Marks
	b)	Design a series clipper circuit that produces a following waveform. Assuming that input applied voltage is 50V (P-P), V_R= -10V and assume Diode is Ideal.	CO3	7 Marks



UNIT-III

5	a)	Sketch the Collector-Coupled Monostable Multivibrator and derive the expression for pulse width.	CO2	7 Marks
	b)	Find lower and upper threshold voltages for Schmitt trigger circuit with the following data. h_{fe}=30, V_{cc}=12V, R_{c1} = 4kΩ, R_{c2} = 1kΩ, R_1 = 2kΩ , R_2=6kΩ, R_s = 1kΩ , R_E = 3kΩ.	CO4	7 Marks
		(OR)		
6	a)	Calculate pulse width period and frequency of output of an astable multivibrator, if R_1= R_2=10KΩ and C_1=C_2=0.01μF.	CO4	6 Marks
	b)	Classify Multivibrators and explain the types of triggering.	CO1	8 Marks

UNIT-IV

7	a)	Define the following: i) Sweep-speed error. ii) Displacement error. iii) Transmission error.	CO1	6 Marks
	b)	Generate a Triggering Waveform using UJT sweep circuit that triggers special purpose devices.	CO6	8 Marks
		(OR)		
8	a)	Derive the expression for slope error in Bootstrap sweep circuit.	CO2	7 Marks
	b)	Identify appropriate circuit to generate linear sweep waveform which can be used in Cathode ray oscilloscope.	CO6	7 Marks

UNIT-V

9	a)	Explain the basic operating principle of sampling gates.	CO1	7 Marks
	b)	Implement NOR gate using CMOS logic.	CO2	7 Marks
		(OR)		
10	a)	Draw the circuit diagram of Diode-transistor logic NAND gate and explain its operation.	CO1	6 Marks
	b)	Realize OR gate using diodes and transistors.	CO2	8 Marks

CODE No.: 16BT40502 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

DATABASE MANAGEMENT SYSTEMS
[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Distinguish strong entity set with weak entity set. Draw an ER diagram to illustrate weak entity set.	CO2	7 Marks
	b)	Describe in detail about the Database Architecture.	CO1	7 Marks
		(OR)		
2	a)	Define Database. Write the applications of Database Systems in detail.	CO1	7 Marks
	b)	Illustrate ER model with an example.	CO1	7 Marks

UNIT-II

3	a)	Discuss about Domain Relational Calculus in detail.	CO1	7 Marks
	b)	Write in detail about altering tables and views with examples.	CO1	7 Marks
		(OR)		
4	a)	Explain the cross product and rename.	CO1	7 Marks
	b)	Consider the following relations containing airline flight information: Flights(flno:integer, from:string,to:string,distance:integer, departs:time, arrives:time); Aircraft(aid:integer, aname:string, cruisingrange:integer) Certified(eid:integer,aid:integer) Employees(eid:integer,ename:string,salary:integer) Write the relational algebraic expression for the following. i) Find the total number of employees whose salary is less than 100000. ii) Find the names of pilots certified for some Airbus aircraft. iii) Find the ***flno*** of flights from Delhi to Newyork. iv) Find the ***eid*** of employee who has certified for more than three flights.	CO4	7 Marks

UNIT-III

5	a)	Discuss different types of aggregate operators with examples in SQL.	CO1	7 Marks
	b)	Illustrate group by and Having clauses with examples.	CO1	7 Marks
		(OR)		
6	a)	Enumerate Multi valued dependencies and Fourth normal form with examples.	CO1	7 Marks
	b)	Write SQL query to find second highest salary of Employee from Employee table.	CO5	7 Marks

UNIT-IV

7	a)	Differentiate two phase locking protocol and strict two phase locking protocol.	CO2	7 Marks
	b)	Describe Timestamp based locking protocol.	CO1	7 Marks

(OR)

8	a)	Write short notes about the following: i) Serializable schedule. ii) Recoverable schedule. iii) Strict schedule.	CO1	7 Marks
	b)	Identify the use of log in transaction roll back and crash recovery.	CO2	7 Marks

UNIT-V

9	a)	Demonstrate searching a given element in B+ trees. Explain with an example.	CO3	7 Marks
	b)	Illustrate insertion of an element in B+ trees with an example.	CO4	7 Marks

(OR)

10	a)	Describe various methods of defining indexes on multiple keys.	CO1	7 Marks
	b)	Show the method to reduce access time with primary index by considering example.	CO3	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

THEORY OF COMPUTATION
[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

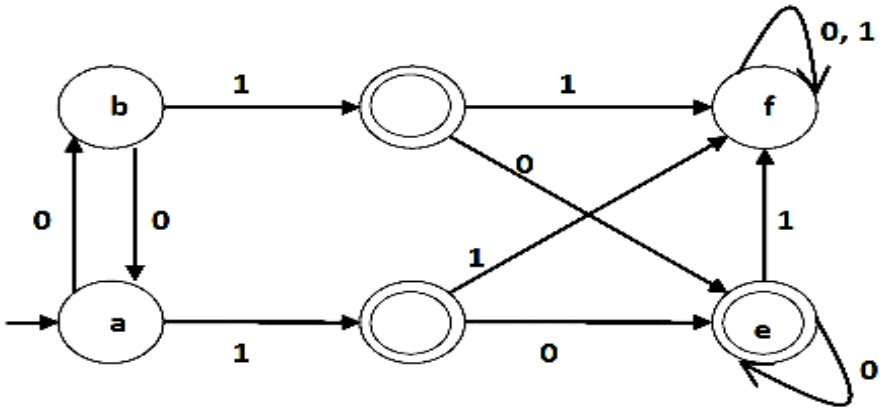
Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Differentiate NFA and DFA.	CO2	7 Marks
	b)	Construct a DFA for the following language L= $\{0^m1^n \mid m \geq 0$ and $n \geq 1\}$.	CO3	7 Marks
		(OR)		
2	a)	Differentiate Moore and Melay machines.	CO2	7 Marks
	b)	Construct a DFA accepting all string in $\{a, b\}$ with even number of a's and b's.	CO3	7 Marks

UNIT-II

3	a)	The set L= $\{a^n b^n \mid n \geq 1\}$ is not a regular. Justify.	CO5	7 Marks
	b)	List and explain the applications of regular expressions.	CO1	7 Marks
		(OR)		
4	a)	Minimize the following automata.	CO3	7 Marks



	b)	Write the Regular expression for the following languages: i) All strings over the alphabet $\{a, b\}$ that contain exactly two a's. ii) All strings over the alphabet $\{a, b\}$ that do not end with ab. iii) Set of all strings over $\{a, b\}$ with 3 consecutive b's. iv) Set of all strings that end with '1' and has no substring '00'.	CO3	7 Marks

UNIT-III

5	a)	State and Prove pumping lemma for CFLs and show that the language $\{0^n10^n \mid n >= 1\}$ is not regular.	CO1, CO5	7 Marks
	b)	Design a Context Free Grammar for the language L = $\{0^n1^n \mid n >= 1\}$.	CO1	7 Marks
		(OR)		
6		Give Leftmost and Rightmost derivations of the following strings from the grammar CFG: S → A | B A → 0A | € B → 0B | 1B | € i) 00101. ii) 1001. iii) 00011.	CO1	14 Marks

UNIT-IV

7	a)	Construct a PDA that recognizes the language $L = \{x = x^R \mid x \in (a, b)^+\}$.	CO3	7 Marks
	b)	Explain the procedure to convert context free grammar into pushdown automata.	CO1	7 Marks
		(OR)		
8	a)	Construct the grammar for the following PDA: $\delta(S,a,X)=(S,AX)$ $\delta(S,b,A)=(S,AA)$ $\delta(S,a,A)=(S,\wedge)$	CO3	7 Marks
	b)	Define deterministic pushdown automata. Explain with an example.	CO1	7 Marks

UNIT-V

9	a)	Design a Turing Machine for $f(x, y) = x + y$.	CO4	7 Marks
	b)	Write short notes on Universal Turing Machine.	CO1	7 Marks
		(OR)		
10		Design a TM to accept the language $L = \{0^n\ 1^n\ 0^n \mid n \geq 1\}$.	CO3	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

IRRIGATION ENGINEERING

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What do you understand by the multipurpose river valley project? Write a short note of on scope of irrigation.	CO2	7 Marks
	b)	Discuss briefly the history of irrigation development in India.	CO2	7 Marks
		(OR)		
2	a)	Explain the salient features of the drip irrigation system. What are the merits and demerits of the drip irrigation?	CO1	7 Marks
	b)	Discuss the factors affecting the choice of method of irrigation.	CO2	7 Marks

UNIT-II

3	a)	Compare weir and barrage with a neat sketch.	CO2	7 Marks
	b)	State the functions of launching aprons and how these are designed.	CO1	7 Marks
		(OR)		
4	a)	Define barrage. How is it different from a weir?	CO1	7 Marks
	b)	How do you fix afflux, pond level, waterway and crest levels for a weir on permeable foundation?	CO2	7 Marks

UNIT-III

5	a)	What are the merits and demerits of a gravity dam over the other types?	CO1	7 Marks
	b)	Analyze the various forces acting on a gravity dam with a neat sketch.	CO2	7 Marks
		(OR)		
6	a)	Briefly explain the stability of foundation of an earth dam against shear stress.	CO6	7 Marks
	b)	Classify spillway and discuss different types of spillways with a neat sketch.	CO2	7 Marks

UNIT-IV

7	a)	Discuss the development of different types of falls with a neat sketch.	CO2	7 Marks
	b)	Discuss the procedure for designing a Sarda type fall.	CO2	7 Marks
		(OR)		
8	a)	Discuss the drawback of Kennedy's theory.	CO2	7 Marks
	b)	Define outlet and enlist the different types of outlets.	CO1	7 Marks

UNIT-V

9	a)	Define cross drainage works and discuss various types of cross drainage works with a neat sketch.	CO1	7 Marks
	b)	How aqueducts are classified and indicate the circumstances under which each one is used?	CO8	7 Marks
		(OR)		
10	a)	Explain the various causes of meandering of rivers with a neat sketch.	CO2	7 Marks
	b)	Define river training and list out the various objectives of river training.	CO1	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

REINFORCED CEMENT CONCRETE STRUCTURES
[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Analyze a R.C. beam of rectangular cross section is required to resist a bending moment of 120KN-m at Service State. Design the suitable dimensions of the cross section and reinforcement for the balanced sections. Take the effective depth as twice the width. Assume M20 grade concrete and Fe 415 grade steel. Adopt working stress method.	CO2	14 Marks

(OR)

2		A T- Beam floor consists of 150mm thick R.C.C slab monolithic with 300mm wide beams. The beams are spaced at 3.5m centre to centre and their effective span is 6m. If the superimposed load on the slab is 5 kN/m^2, design an intermediate Tee-beam. Use M20 mix and Fe415 grade steel.	CO3	14 Marks

UNIT-II

3	a)	Give some examples for structural elements, which will be subjected to torsional moment in view of IS 456.	CO7	7 Marks
	b)	Determine the development length of 20mm. Fe 415 bar in tension and compression with M20 grade concrete.	CO3	7 Marks

(OR)

4		A Cantilever beam with span 3m has an effective depth 400mm at the supports and 200mm at the free end and constant width of 250mm. It carries a load of 75 kN/m including self weight. It is reinforced with 4 bars of 20mm dia. Use M20 grade concrete and Fe415 grade steel. Design shear reinforcement.	CO3	14 Marks

UNIT-III

5	a)	Where and how do you provide torsional reinforcement in two way simply supported slab.	CO1	4 Marks
	b)	Draw the sketch of a standard bend. What is its anchorage value?	CO1	4 Marks
	c)	Explain where and how you provide torsion reinforcement in slabs.	CO1	6 Marks

(OR)

6		Design a two way slab for a room 4500 x 3500mm clear size, if the super imposed load is 2 kN/m^2 and floor finish of 1 kN/m^2. The edges of the slab are simply supported and corners are not held down. Use M 20 grade concrete and Fe 415 steel.	CO3	14 Marks

UNIT-IV

7	a)	State the curtailment conditions for one way slab when it is: i) Simply supported. ii) Cantilever slab.	CO1	7 Marks
	b)	Design a simply supported RCC slab for a room of clear dimensions 3 x 8m, width of support is 250mm. Superimposed load is 2 kN/m² and weight of finishes is 1 kN/m². Use M25 concrete and HYSD bars of Fe415 grade. Check for deflection.	CO3	7 Marks

(OR)

8		Design the reinforcement in a circular column of diameter 350mm with helical reinforcement of 8mm diameter to support a factored load of 1400kN. The column has an unsupported length of 3.5m and is braced against side sway. Adopt M20 grade concrete and Fe415 steel bars.	CO3	14 Marks

UNIT-V

9		Explain briefly about the structural behavior of staircase.	CO1	14 Marks

(OR)

10		A Longitudinal type of a staircase spans a distance of 3.75m c/c of beams. The flight consists of 15 steps. Take rise = 175mm, tread is 250mm. Assuming grade 25 concrete and Fe 415 steel, calculate the reinforcement and design the staircase for a live load of 5 kN/m². Assuming the breadth of the staircase as 1.4m.	CO3	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

SOIL MECHANICS
[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Sketch the phase diagram for a soil and indicate the volumes and weights of the phases on it. Define 'void ratio', 'degree of saturation' and 'water content'. What is a unit phase diagram?	CO8	6 Marks
	b)	A sample of sand above water table was found to have a natural moisture content of 15% and a unit weight of 18.84kN/m^3. Laboratory tests on dried sample indicated values e_{min} = 0.5 and e_{max} = 0.85 for the densest and loosest state respectively. Compute the degree of saturation and the relative density. Assume G = 2.65. Comment on the relative density value.	CO3	8 Marks

(OR)

2	a)	What is the difference between the soil classification based on particle size and based on textural? Discuss the limitations of the two.	CO2	6 Marks
	b)	The Atterberg limits of a soil sample are: liquid limit = 50%, plastic limit = 30% and shrinkage limit = 15%. If the specimen of this soil shrinks from a volume of 10cm^3 at liquid limit to 5.94cm^3 when oven dried, calculate the shrinkage ratio and specific gravity of soil solids.	CO2	8 Marks

UNIT-II

3	a)	Distinguish the following: i) Constant head permeability test and falling head permeability test. ii) Differentiate between seepage velocity and discharge velocity.	CO2	6 Marks
	b)	In a variable head permeameter, the cross sectional area of the sample was 850 sq.cm and its length was measured as 11.2cm. The head was noted to fall from 90 to 62cm in 2 minutes. If the cross sectional area of the stand pipe was 2.8 sq.cm, find out the coefficient of permeability of the soil. If a drop of head is measured from 58 to 37cm in the same experiment, determine the time required for the drop of head. Also, explain the necessity of testing permeability of soil in civil engineering practice with regard to sustainable structures.	CO6	8 Marks

(OR)

4	a)	What is quick sand condition? Derive the expression for the critical hydraulic gradient.	CO2	6 Marks
	b)	A soil profile at a site comprises of ; i) top layer of sand of 3m thickness and saturated unit weight of 20kN/m^3 . ii) a second layer of saturated clay 4m thick with saturated unit weight of 19kN/m^3. The water table is at ground level. Compute and sketch the variation in total pressure, neutral pressure and effective pressure over a depth of 7m.	CO2	8 Marks

UNIT-III

5	a)	Explain the difference between Boussinesq's and Westergaard's methods of calculating stresses in a soil mass due to an external loading. Discuss which method you would prefer and why.	CO3	6 Marks
	b)	Two footings 6m apart (c/c distance) at the same level carry concentrated loads of 1500kN and 1800kN respectively. Compute the vertical pressure at the following points: i) mideway between the footings at a depth of 4m below the footing level. ii) vertically below the centre of each footing at the same depth as in (i).	CO2	8 Marks

(OR)

6	a)	Describe standard proctor test and modified proctor test in brief. How would you decide the type of compaction test to be conducted in the laboratory?	CO4	6 Marks
	b)	The following data are available in connection with the construction of an embankment. i) Soil from borrow pit: Natural density = 17.5kN/m^3; Natural water content = 12%. ii) Soil after compaction: Density = 20kN/m^3; water content=18%. Estimate (i) the quantity of soil to be excavated from the borrow pit and (ii) the amount of water to be added, for every 100m^3 of compacted soil of the embankment.	CO2	8 Marks

UNIT-IV

7	a)	Explain in detail the determination of coefficient of consolidation using log t method.	CO1	5 Marks
	b)	A 24mm thick undisturbed sample of saturated clay is tested in the laboratory with drainage allowed on both faces. The sample reaches 50% degree of consolidation in 45 minutes. If the clay layer from which the sample was obtained is 4.8m thick and is free to drain at both of its faces, calculate the time required for the clay layer to undergo the same degree of consolidation. What would have been the time of consolidation if the clay layer has only single drainage? Assume uniform distribution of consolidating pressure.	CO2	9 Marks

(OR)

8	a)	Differentiate compaction and consolidation of soils.	CO2	4 Marks
	b)	A building column has a footing area of 2m x 3m and transmits a pressure of 150kN/m^2 at its base embedded 1.6m below ground level. Assuming a pressure distribution of two vertical to one horizontal, determine the consolidation settlement at the middle of the clay layer of thickness 4m with saturated unity weight of 20kN/m^3 and initial void ratio of 0.6 with compression index 0.5 underlies fine sand deposit of 5m thickness. The water table is at a depth of 2m from ground level. The degree of saturation of sand above water table is 30 %. Take the specific gravity of fine sand as 2.65 and the porosity is 40 %.	CO2	10 Marks

UNIT-V

9 a) Discuss unconfined compression test with neat sketch as per IS Code. Is this test can be used of c-Φ soils? Explain. CO7 6 Marks

b) A series of undrained shear box tests (area of box = 3600mm^2) were carried out on a soil with the following results. CO2 8 Marks

Normal Load (N)	90	180	270
Shear force at failure (N)	70	90	117

Determine the cohesion and angle of friction of the soil with respect to total stresses.

(OR)

10 a) Discuss the shear strength characteristics of cohesive soils. Is shear strength of soil affects the safety of substructure? Explain. CO5 6 Marks

b) In an insiute vane shear test on a saturated clay, a torque of 35Nm was required to shear the soil. The diamter of the vane was 50mm and length 100mm. Calculate the undrained shear strength of the clay. The vane was then rotated rapidly to cause remoulding of the soil. The torque required to shear the soil in the remoulded state was 5Nm. Determine the sensitivity of the clay. CO2 8 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

STRUCTURAL ANALYSIS-II

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Derive the expression for maximum bending moment and shear force for a simply supported beam with a single concentrated load 'W' moving from left to right.	CO1	6 Marks
	b)	In a simply supported beam AB of span 20m, determine the maximum bending moment and maximum shear force at a section 5m from A, due to the passage of uniformly distributed load of intensity 20kN/m, longer than the span.	CO2	8 Marks

(OR)

2		A simply supported beam has a span of 20m. A uniformly distributed load of 20kN/m and 5m long crosses the span. Using influence lines, find the maximum bending moment and shear force produced at the point 8m from the left support.	CO2	14 Marks

UNIT-II

3		Analyse the two-span continuous beam shown in figure01 by slope deflection method and draw the bending moment and shear force diagrams. Assume EI is constant throughout.	CO6	14 Marks

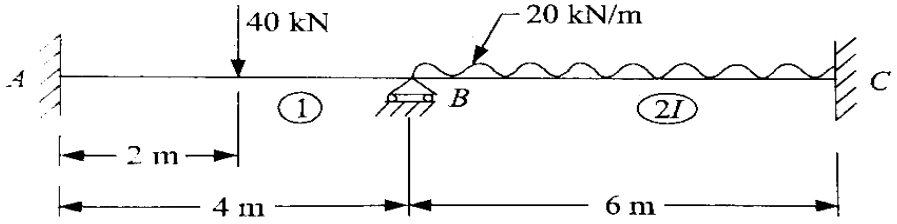

Figure 01

(OR)

4		Analyse the continuous beam shown in figure 02 by using moment distribution method and draw the bending moment diagram.	CO6	14 Marks

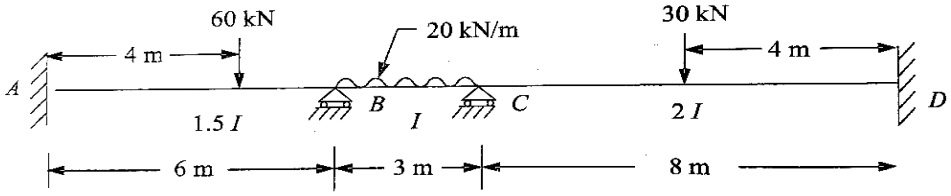

Figure 02

UNIT-III

5		Analyse the continuous beam shown in figure 03 by Kani's method.	CO4	14 Marks

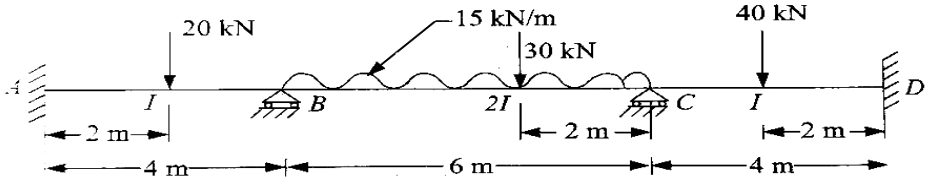

Figure 03

(OR)

6	a)	Derive the expression for strain energy due to axial load.	CO1	7 Marks
	b)	Using strain energy method, determine the deflection of the free end of a cantilever of length 'L' subjected to a concentrated load 'P' at the free end.	CO2	7 Marks

UNIT-IV

7		Explain with an example the following : i) Determinate and indeterminate structures. ii) Static indeterminacy. iii) Kinematic indeterminacy.	CO5	14 Marks

(OR)

8		Analyze the truss shown in figure below by Castigliano's theorem. Area of cross section of members in mm^2 is shown in figure 04. E is constant throughout.	CO4	14 Marks

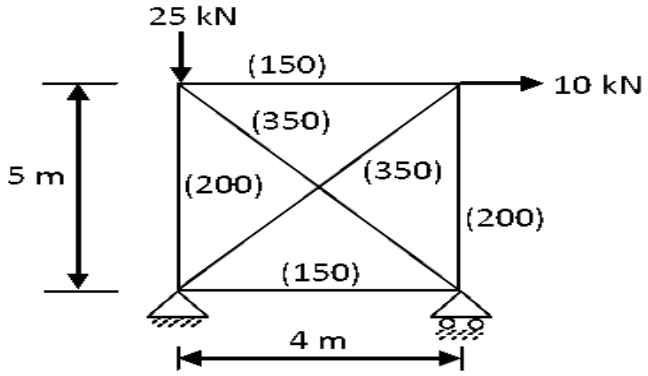

Figure 04

UNIT-V

9	a)	Define plastic hinge and plastic moment capacity.	CO1	7 Marks
	b)	Determine the collapse load of a fixed beam shown in figure 05.	CO3	7 Marks

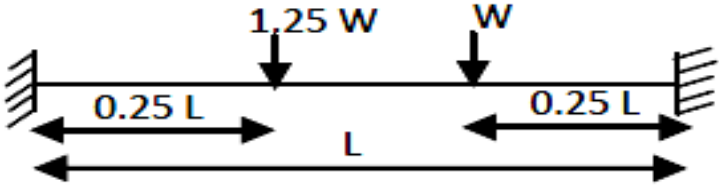

Figure 05

(OR)

10		Calculate the plastic moment capacity required for the continuous beam with working loads shown in figure 06.	CO3	14 Marks

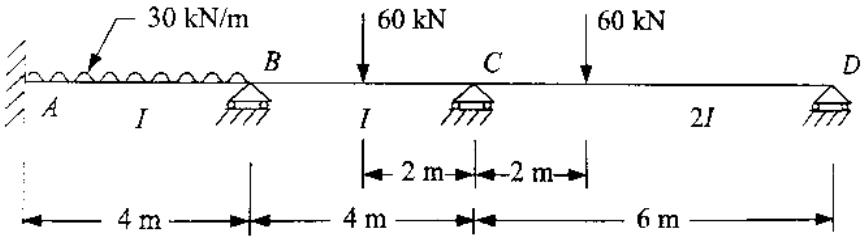

Figure 06

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

WASTE WATER TECHNOLOGY
[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Enumerate and explain the various sewer appurtenances with neat sketch how they are useful for society in easy operation and maintenance of sewerage system.	CO9	7 Marks
	b)	A city with a population of 150,000 has an area of 40km². Rate of water supply is 135 litres per capita per day of which 75% turns into sewer. The average run-off coefficient is 0.5 and intensity of rainfall is 12.5mm/hr. Estimate the quantity of combined sewage. Take peak factor as 2.5.	CO3	7 Marks
		(OR)		
2	a)	Briefly explain the various factors to be considered in the design of sewerage system. Design a sanitary sewer to a population of 70,000 receiving water at 90Lpcd. Minimum self cleansing velocity at design flow is 0.8m/s, maximum depth of flow is 0.5D. Assume other design criteria as applicable.	CO3	7 Marks
	b)	State and recommend to the society the various types of water carriage systems and their usefulness in different situations.	CO4	7 Marks

UNIT-II

3	a)	If 2.5ml of raw sewage has been diluted to 250ml and the D.O concentration of the diluted sample at the beginning was 8.0mg/l and 50mg/l after 5 days incubating at20ºC, find the BOD of raw sewage.	CO2	7 Marks
	b)	Give the layout of primary treatment unit operations of wastewater treatment plant and write the function of each unit and communicate importance of treatment and disposal.	CO9	7 Marks
		(OR)		
4	a)	Design a circular primary sedimentation tank to treat an average sewage flow of 5,000m³/day, suitably assuming the design criteria. Draw a neat sketch of the designed tank.	CO3	7 Marks
	b)	Write the design criteria for a grit chamber and brief its construction and functioning.	CO1	7 Marks

UNIT-III

5	a)	Distinguish between an Oxidation Ditch and an Oxidation Pond.	CO1	7 Marks
	b)	Design a secondary sedimentation tank to treat effluent from Activated Sludge plant with the following data: Average sewage flow = 60Mld; Mixed Liquor Suspended Solids (MLSS) concentration of influent=3000mg/l; peak flow factor = 2.5.	CO3	7 Marks
		(OR)		
6	a)	Examine and design a single stage trickling filter to yield an effluent BOD_5 of 30mg/l. The influent BOD following primary clarification is 175mg/l and the flow is 15,000 m³/d.	CO3	9 Marks
	b)	With the help of a neat sketch, explain the principles involved in the Activated Sludge Process in the treatment of sewage.	CO5	5 Marks

UNIT-IV

7	a)	Illustrate with the help of flow chart and explain various processes involved in the sludge treatment and disposal.	CO1	7 Marks
	b)	Explain briefly the process of removing of nitrogen and phosphorus from waste water.	CO1	7 Marks

(OR)

8	a)	Briefly discuss various health issues due to various methods of sewage disposal.	CO6	7 Marks
	b)	Explain briefly about the removal process of suspended solids and pathogenic bacteria.	CO1	7 Marks

UNIT-V

9	a)	What do you understand by Oxygen – Sag Curve? Derive Streeter-Phelps equation.	CO1	7 Marks
	b)	Discuss the standards for disposal of sewage in water bodies.	CO8	7 Marks

(OR)

10	a)	Explain briefly the type of treatment achieved in Septic Tank. Describe the criteria used in the design.	CO1	7 Marks
	b)	Discuss the various methods of disposal of septic tank effluent.	CO5	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

CONTROL SYSTEMS

[Electrical and Electronics Engineering, Electronics and Communication Engineering]

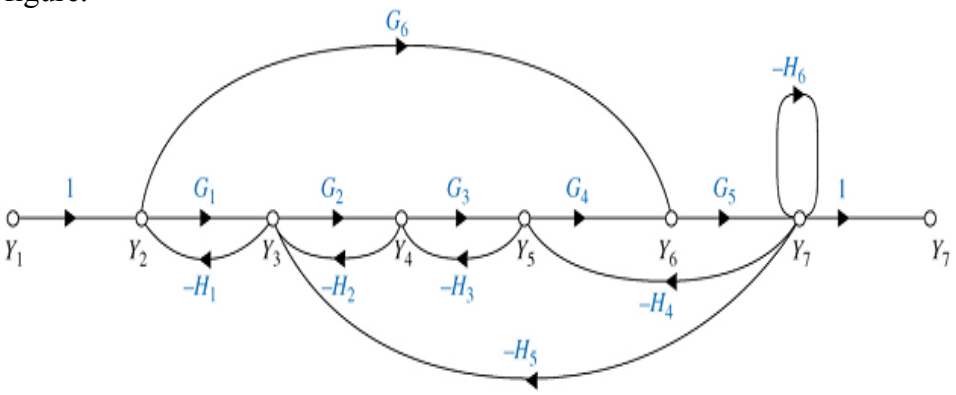
Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Derive an expression for the transfer function of an armature controlled D.C. servomotor. CO5 7 Marks

b) Determine the transfer function $\frac{Y_7}{Y_1}$ for the signal flow graph shown below figure. CO5 7 Marks



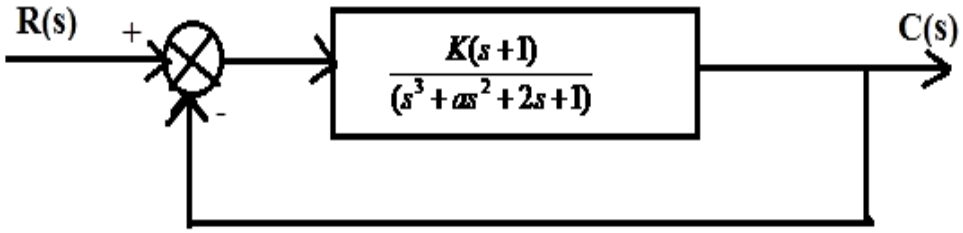
(OR)

2 a) Explain clearly the effect of feedback on overall gain, stability, external disturbance or noise and sensitivity of a control system. CO1 8 Marks

b) Apply open loop and closed loop control systems to model a room heating system. CO6 6 Marks

UNIT-II

3 a) A system oscillates with frequency ω if it has poles at $S = \pm j\omega$ and no poles in the right-half of the s-plane. Determine the value of 'K' and 'a' so that the system shown in figure below oscillates at a frequency of 2 rad/sec. CO4 7 Marks



b) Derive expressions for the steady state errors of type – 0, type – 1 and type – 2 systems excited by a unit – parabolic input. CO4 7 Marks

(OR)

4 Plot the root loci for a closed-loop control system with $G(s) = \frac{K(s+9)}{s(s^2+4s+12)}, H(s) = 1$. Locate the closed-loop poles on the root loci such that the dominant closed-loop poles have a damping ratio equal to 0.5. Determine the corresponding value of gain 'K'. CO5 14 Marks

UNIT-III

5	a)	Describe the procedural steps to be followed to construct Bode plot.	CO1	10 Marks
	b)	Define gain cross over frequency, phase cross over frequency, gain margin and phase margin.	CO1	4 Marks

(OR)

6		Draw the Nyquist plot and assess the stability of the closed-loop system whose open-loop transfer function is given by $G(s)H(s) = \frac{1}{s(s+1)(3s+1)}$.	CO5	14 Marks

UNIT-IV

7	a)	Briefly explain the types of controllers and importance of each controller in a linear control systems.	CO1	7 Marks
	b)	Explain the effect of PD controller on time response characteristics of a second order system.	CO1	7 Marks

(OR)

8		Consider the unity feedback system whose open loop transfer function is $G(s) = \frac{K}{s^2(1+0.1S)}$.	CO3	14 Marks

Design a suitable compensator to meet the following specifications.

i) Acceleration error constant, $K_a = 10$,

ii) Phase margin = 30 degree.

UNIT-V

9	a)	Develop the state space model for linear continuous system.	CO2	7 Marks
	b)	The state model of linear system is described by	CO4	7 Marks

$$\dot{X}(t) = \begin{bmatrix} 0 & 1 \\ -2 & -3 \end{bmatrix} \begin{bmatrix} x_1(t) \\ x_2(t) \end{bmatrix} + \begin{bmatrix} 0 \\ 1 \end{bmatrix} u(t) \ .$$

Find the solution of the state equation for the unit step input when,

$$X(0) = \begin{bmatrix} 1 \\ 1 \end{bmatrix}.$$

(OR)

10	a)	Determine the transfer function for the system whose state model is given as $\begin{bmatrix} \dot{X}_1 \\ \dot{X}_2 \\ \dot{X}_3 \end{bmatrix} = \begin{bmatrix} -2 & 1 & 0 \\ 0 & -3 & 1 \\ -3 & -4 & -5 \end{bmatrix} \begin{bmatrix} X_1 \\ X_2 \\ X_3 \end{bmatrix} + \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix} u$, $y = \begin{bmatrix} 0 & 1 & 0 \end{bmatrix} \begin{bmatrix} X_1 \\ X_2 \\ X_3 \end{bmatrix}$	CO4	10 Marks
	b)	State the properties of State Transition Matrix.	CO1	4 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

POWER ELECTRONICS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	List the differences between various power transistors and describe the advantages of power transistor over thyristors.	CO1	7 Marks
	b)	By using two transistor analogy of SCR, justify the statement "Gate current loses control over the conduction of SCR once the SCR starts conducting".	CO2	7 Marks
		(OR)		
2	a)	Discuss the consequences of a method that increases the voltage rating of a string formed by the combination of several SCRs and propose appropriate remedies.	CO2	8 Marks
	b)	Determine the number of SCRs to be connected in a: i) series string with a total voltage of 5kV. ii) parallel string with a total current of 1.5kA. Consider the voltage and current rating of each SCR as 800V and 100A respectively and de-rating factor of 0.15.	CO3	6 Marks

UNIT-II

3	a)	Analyze the operation of single phase semi-converter with RL load with delay angle $\alpha = 120^0$ and sketch the associated waveforms.	CO2	8 Marks
	b)	Considering the effect of source inductance on the performance of single phase bridge type fully controlled rectifier with RL load, derive an expression for average load current.	CO2	6 Marks
		(OR)		
4	a)	Compare single-pulse, three-pulse and six-pulse converters and identify the converter configuration that can produce both three pulse and six pulse output voltage and justify.	CO5	10 Marks
	b)	A three phase fully controlled bridge converter is connected to a 230V, 50Hz supply. Determine the values of average load voltage and rms load voltage if it is operating at a firing angle delay of 30^0. Neglect source resistance.	CO4	4 Marks

UNIT-III

5		With the help of neat circuit schemes and necessary waveforms explain the circulating and non-circulating current modes of operation of a single phase dual converter with R-load.	CO1	14 Marks
		(OR)		
6	a)	Write short notes on the following single phase converters. i) Four quadrant converter. ii) Fixed frequency AC to AC converter. iii)Variable frequency AC to AC converter.	CO1	9 Marks
	b)	A 20Ω resistive load is connected through anti-parallel combination of two SCRs to a 230V, 50Hz supply. If the firing angle of the SCR in every positive half cycle is 60^0, determine the average load voltage and current.	CO4	5 Marks

UNIT-IV

7	a)	Discuss the differences between natural and forced commutation techniques.	CO1	4 Marks
	b)	With the help of neat circuit diagram and associated waveforms, explain the principle of Class-D commutation technique.	CO1	10 Marks

(OR)

8	a)	Evaluate the expression for Chopping period of a step-down chopper with current limit control strategy.	CO4	8 Marks
	b)	A step-down chopper operating at a frequency of 500Hz supplies a load of 3Ω and an inductance of 9m.H from a 60V battery. Assume that a free-wheeling diode is connected across the load. Calculate the average load voltage and current for ON/OFF ratio of 1:1.	CO4	6 Marks

UNIT-V

9	a)	Illustrate the operation of basic series inverter and state its limitations.	CO1	10 Marks
	b)	Calculate the output frequency of a basic series inverter with the following parameters: L=10mH, C=0.4μF, R=300Ω and T_{OFF}=0.2ms.	CO4	4 Marks

(OR)

10		A single phase bridge inverter is used to supply a load of 10Ω resistance and 20mH inductance from a 320V DC source. If the inverter is operating at 50Hz determine the steady state power delivered to that load for: i) square wave operation. ii) quasi-square wave operation with an on-period of 0.25 of a cycle.	CO4	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

SYNCHRONOUS MACHINES
[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Justify the following statements related to an alternator: i) Rotating field system is preferred over stationary field system. ii) Short circuit characteristics is a straight line where as open circuit characteristics is a curve.	CO2	14 Marks
		(OR)		
2	a)	Explain how the "Potier Triangle" can be drawn with the help of open circuit characteristics and zero power factor characteristics.	CO1	10 Marks
	b)	A 500V, 50kVA, single-phase alternator has an effective armature resistance of 0.2Ω. An excitation current of 10A produces 200A armature current on short circuit and an emf of 450V on open circuit. Calculate synchronous reactance.	CO4	4 Marks

UNIT-II

3	a)	Develop the phasor diagram for a salient-pole type alternator operating at lagging and leading pf loads.	CO2	6 Marks
	b)	A 400V, 50Hz delta-connected alternator has a direct-axis synchronous reactance of 0.1Ω and a quadrature-axis synchronous reactance of 0.07Ω per phase. The armature resistance is negligible. The alternator is supplying 1000A at 0.8 lagging pf. Find the: i) Excitation emf, neglecting saliency. ii) Excitation emf taking into account the saliency.	CO4	8 Marks
		(OR)		
4		From the equivalent circuit of a cylindrical rotor alternator, derive an expression for power input and power output. Also derive the conditions for maximum power input and output.	CO2	14 Marks

UNIT-III

5	a)	Explain the effect of varying of excitation on the power factor, armature current and load angle of a synchronous generator connected to infinite bus bar.	CO1	6 Marks
	b)	Two similar alternators operating in parallel have the following data: Alternator 1 : Capacity 700kW, frequency drops from 50Hz at no-load to 48.5Hz at full-load Alternator 2 : Capacity 700kW, frequency drops from 50.5Hz at no-load to 48Hz at full-load Speed regulation of prime movers is linear in each case. i) Calculate how a total load of 1200kW is shared by each alternator. Also find the operating bus-bar frequency at this load. ii) Compute the maximum load that these two units can deliver without overloading either of them.	CO4	8 Marks
		(OR)		

6	a)	Discuss about short circuit ratio and its significance. Explain the method to determine short circuit ratio of a synchronous machine using OCC and SCC.	CO1	6 Marks
	b)	The speed regulations of two 800kW alternators A and B running in parallel are 100% to 104% and 100% to 105% from full-load to no-load respectively. How will the two alternators share a load of 1000 kW?	CO4	8 Marks

UNIT-IV

7	a)	Explain two important functions served by damper windings in a synchronous motor. State the various applications of synchronous motor.	CO1	7 Marks
	b)	A substation operating at its full load of 1000kVA supplies a load of 0.71pf lagging. Identify the permissible additional load at this power factor and give the rating of synchronous condenser to raise the substation pf to 0.87 lagging.	CO3	7 Marks

(OR)

8	a)	A synchronous motor develops torque only at the synchronous speed whereas an induction motor develops torque at all speeds except at synchronous speed. Justify the statement.	CO2	6 Marks
	b)	Give the causes, effects and remedial factors for hunting phenomenon in synchronous motor.	CO1	8 Marks

UNIT-V

9	a)	Draw a torque-speed curve of a single-phase induction motor on the basis of Double-revolving field theory.	CO2	4 Marks
	b)	Describe the principle of operation of a reluctance motor giving suitable construction diagrams. State its various applications.	CO1	10 Marks

(OR)

10		Write a short notes on: i) Split phase motors. ii) Shaded pole motors.	CO1	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

TRANSMISSION AND DISTRIBUTION

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss the effect of earth on the capacitance of a 1 phase and 3-phase transmission line.	CO2	7 Marks
	b)	A 3-phase, 50Hz, 66kV overhead transmission line has its conductors arranged at the corners of an equilateral triangle of 3m sides and the diameter of each conductor is 1.5cm. Determine the inductance and capacitance per phase, if the length of line is 100km. And also calculate the charging current.	CO4	7 Marks
		(OR)		
2	a)	Show that in a three core belted cable the neutral capacitance to each conductor Cn is equal to Cs +3Cc where Cs and Cc are capacitance of each conductor to sheath and to each other respectively.	CO2	6 Marks
	b)	Describe with the neat sketch, the construction of a 3 core belted type cable.	CO3	8 Marks

UNIT-II

3	a)	What are the factors which govern the performance of a transmission line?	CO6	5 Marks
	b)	What are the voltages regulating equipments used in transmission systems?	CO1	3 Marks
	b)	A 200 kV surge travels on line of 400Ω surge impedance and reaches a junction where two branch lines of surge impedances of 500Ω and 300Ω are connected with the transition line. Find the surge voltage and current transmitted into each branch line. Also find the reflected voltage and current.	CO2	6 Marks
		(OR)		
4	a)	Derive the equivalent ABCD constants of a transmission line connected in series with impedances at both ends.	CO2	7 Marks
	b)	A 3-phase transmission line 200km long has the following constants. R/ph/km=0.16Ω, Reactance/ph/km=0.25Ω, Shunt admittance/ph/km = 1.5×10^{-6} seimens. Calculate by rigorous method the sending end voltage and current when the line is delivering a load of 20MW at 0.8 p.f lag. The receiving end voltage is kept constant at 110kV.	CO4	7 Marks

UNIT-III

5	a)	Find the voltage distribution and string efficiency of a 3-unit suspension insulator string if the capacitances of the link pins to earth and to the line are respectively 20% and 10% of the self capacitance of each unit. If a guard ring increases the capacitance to the line of lower link pin to 35% of the self capacitance of each unit, find the redistribution of voltage and efficiency.	CO4	7 Marks
	b)	A string of suspension insulators consists of 5 units each having capacitance C. The capacitance between each unit and earth is 1/8 of C. Determine the voltage distribution across each insulator in the string as a percentage of voltage of conductor to earth. If the insulators in the string are designed to withstand 36 kV maximum, calculate the operating voltage of the line where 5 suspension insulators can be used.	CO3	7 Marks

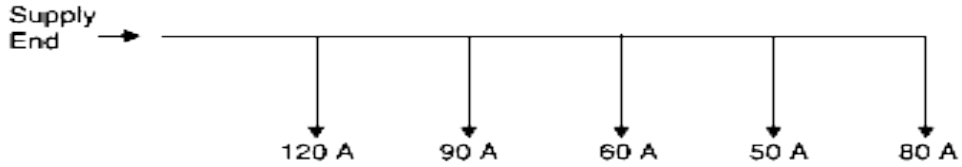
(OR)

6	a)	Define string efficiency. What causes the efficiency to be less than 100%? Describe any one method for improving the string efficiency.	CO5	6 Marks
	b)	An overhead line has a span of 150m between level supports. The conductor has a cross-sectional area of 2cm². The ultimate strength is 5000kg/cm² and safety factor is 5. The specific gravity of the material is 8·9gm/cc. The wind pressure is 1·5kg/m. Calculate the height of the conductor above the ground level at which it should be supported if a minimum clearance of 7m is to be left between the ground and the conductor.	CO4	8 Marks

UNIT-IV

7	a)	Explain the following systems of distribution : i) Radial system. ii) Ring main system. iii) Interconnected system.	CO1	7 Marks
	b)	A 2-wire DC distributor AB is fed from both ends. At feeding point A, the voltage is maintained as at 230V and at B 235V. The total length of the distributor is 200 metres and loads are tapped off as under: 25 A at 50 metres from A; 50 A at 75 metres from A 30 A at 100 metres from A; 40 A at 150 metres from A The resistance per kilometre of one conductor is 0·3 Ω. Calculate: i) currents in various sections of the distributor. ii) minimum voltage and the point at which it occurs.	CO4	7 Marks

(OR)

8	a)	A 2-wire DC distributor is 250m long. It is to be loaded as shown in figure at 50m intervals. If the maximum voltage drop is not to exceed 10V and the resistivity of core material is 0·7 x 2·54 μΩ cm, determine the maximum cross-sectional area of each conductor 	CO4	7 Marks
	b)	A single phase AC distributor AB 300 metres long is fed from end A and is loaded as under : i) 100 A at 0·707 p.f. lagging 200 m from point A ii) 200 A at 0·8 p.f. lagging 300m from point A The load resistance and reactance of the distributor is 0·2 Ω and 0·1 Ω per km. Calculate the total voltage drop in the distributor. The load power factors refer to the voltage at the far end.	CO4	7 Marks

UNIT-V

9	a)	Discuss about the three factors, which affect the distribution system planning in the near future.	CO5	7 Marks
	b)	Explain about the distribution system planning models clearly.	CO5	7 Marks

(OR)

10	a)	What are the different types of bus-bar arrangements used in sub-stations? Illustrate your answer with suitable diagrams.	CO6	7 Marks
	b)	Mention the various factors that are to be considered in selecting the ideal substations.	CO6	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

DESIGN OF MACHINE ELEMENTS-II

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Design a journal bearing for a centrifugal pump from the following data : Load on the journal = 20,000N; Speed of the journal = 900 r.p.m.; Type of oil is SAE 10, for which the absolute viscosity at 55^0C = 0.017 kg/m-s; Ambient temperature of oil = 15.5^0C ; Maximum bearing pressure for the pump = 1.5 N/mm^2. Also calculate mass of the lubricating oil required for artificial cooling, if rise of temperature of oil be limited to 10^0C. Heat dissipation coefficient = 1232 W/m^2/^{0}C.	CO3	14 Marks
		(OR)		
2		The main bearing of a steam engine is 100mm in diameter and 175mm long. The bearing supports a load of 28kN at 250 r.p.m. If the ratio of the diametral clearance to the diameter is 0.001 and the absolute viscosity of the lubricating oil is 0.015 kg/m-s, find: i) the coefficient of friction. ii) the heat generated at the bearing due to friction.	CO2	14 Marks

UNIT-II

3		A shaft rotating at constant speed is subjected to variable load. The bearings supporting the shaft are subjected to stationary equivalent radial load of 3kN for 10% of time, 2kN for 20% of time, 1kN for 30 % of time and no load for remaining time of cycle. If the total life expected for the bearing is 20 x 10^6 revolutions at 95% reliability, calculate dynamic load rating of the ball bearing.	CO6	14 Marks
		(OR)		
4		Define the following terms as applied to rolling contact bearings: i) Basic static load rating. ii) Static equivalent load. iii) Basic dynamic load rating. iv) Dynamic equivalent load.	CO1	14 Marks

UNIT-III

5		Write the design procedure for spur gears.	CO1	14 Marks
		(OR)		
6		Design a pair of helical gears to transmit 12kW at 1200 r.p.m of pinion. The velocity ratio is 3:1 pinion has 24 teeth and is made of 0.4% carbon steel untreated. The gear is made of cast steel. The teeth are 14.5^0 involute form in normal plane. Helix angle is 25^0.	CO3	14 Marks

UNIT-IV

7	a)	Explain about helical spring under compression due to axial load with neat sketch	CO1	7 Marks
	b)	Determine the width and thickness of a flat spring carrying a central load of 3kN. The deflection in which is limited to 60mm. The spring is supported at both ends at a distance of 1.2m and is of constant thickness and varying width type. Allow a stress of 40MPa. Take E = 206GPa.	CO3	7 Marks
		(OR)		

8 One helical spring is rested inside another. The dimensions are tabulated. Both springs have same free length and carry a maximum load of 3kN. Take G = 80GPa. CO4 14 Marks

Particulars	Outer Spring	Inner Spring
No. of active coils	6	10
Wire diameter	12.5 mm	6.3 mm
Mean coil diameter	87.5 mm	56.7 mm

Determine for each spring: (i) The load carried, (ii) The total deflection, (iii) The torsional shear stress induced.

UNIT-V

9 a) Derive the expression for centrifugal tension in the flat belt drive. CO5 7 Marks

b) Write down the criteria of design of a connecting rod. CO1 7 Marks

(OR)

10 Write a short note on:

i) Condition for the Transmission of Maximum Power by a belt. CO1 7 Marks

ii) Whipping stress in connecting rod. CO1 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

INDUSTRIAL ENGINEERING AND MANAGEMENT

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I		
1		Identify different functions of management and explain each one of them with examples.	CO1	14 Marks
		(OR)		
2	a)	Explain briefly Maslow's theory of motivation.	CO2	7 Marks
	b)	Differentiate between Mc Gregor's Theory X and Theory Y.	CO3	7 Marks
		UNIT-II		
3		"Maintenance functions, though an indirect function, adds value to the product / service being offered "substantiate your answer with suitable examples.	CO2	14 Marks
		(OR)		
4	a)	Elucidate various redundancies, arranging them in the ascending order of reliability.	CO1	6 Marks
	b)	A critical measuring instrument consists of two sub-systems connected in series. Sub-systems A and B have reliabilities 0.90 and 0.92 respectively, for a certain operating time. It is necessary that the reliability of the instrument be raised to a minimum value of 0.917 by using parallel subsystems of A alone. Determine the minimum number of units of A that should be used with one B to get a minimum reliability value of 0.917. What is the actual reliability value obtained? If you use two units of A and two units of B to achieve the desired result, what will be the system reliability in such a case?	CO4	8 Marks
		UNIT-III		
5		Define Productivity. Explain the factors that affect productivity.	CO1	14 Marks
		(OR)		
6		Discuss in detail various allowances for determining standard time in time study.	CO1	14 Marks
		UNIT-IV		
7		Give a brief note on: i) Functions of Stores Manager. ii) Purchase Management. iii) Value analysis.	CO1	14 Marks
		(OR)		
8		The demand for an item in a company is 18000 units per year, and the company can produce the item at a rate of 3000 per month. The cost of one setup is Rs.500 and the holding cost of one unit is Rs.0.15 per month. The cost of shortage is Rs 20 per year. Determine the optimum manufacturing quantity and the number of shortages. Also determine the manufacturing time and time between setups.	CO4	14 Marks
		UNIT-V		
9		Discuss the Industrial Dispute Act and its importance to Industrial Dispute in manufacturing plant.	CO6	14 Marks
		(OR)		
10		Define TQM and explain the elements of TQM using block diagram.	CO5	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

METROLOGY AND MEASUREMENTS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the different types of errors and its causes.	CO1	7 Marks
	b)	Briefly explain precision and accuracy, repeatability and reproducibility.	CO1	7 Marks
		(OR)		
2	a)	What is the need of calibration? Explain the classification of various standards.	CO1	7 Marks
	b)	Write short notes on shaft and hole basis systems.	CO1	7 Marks

UNIT-II

3	a)	Explain the concept of Taylor's principle in designing of gauges.	CO3	7 Marks
	b)	With a neat sketch, explain in detail about the pneumatic comparator.	CO5	7 Marks
		(OR)		
4	a)	Classify the comparators and discuss about the optical comparator with necessary diagram.	CO4	7 Marks
	b)	List out the instruments for angular measurement and explain in detail about measurement of angles using Sine bar.	CO5	7 Marks

UNIT-III

5	a)	Describe the working principle of Auto collimators with a neat sketch.	CO5	7 Marks
	b)	Explain in detail about surface roughness and surface waviness.	CO1	7 Marks
		(OR)		
6	a)	Discuss in detail about working of Interferometer with its applications.	CO5	7 Marks
	b)	With a neat sketch, explain the working principle of profile graph for roughness measurement.	CO5	7 Marks

UNIT-IV

7	a)	Explain the terms related with elements of thread measurements.	CO1	7 Marks
	b)	Explain the two wire method for finding effective diameter of screw threads.	CO5	7 Marks
		(OR)		
8	a)	What are the methods employed for gear tooth measurement? Explain anyone in detail.	CO1	7 Marks
	b)	Explain in detail about the elements of gear measurements.	CO1	7 Marks

UNIT-V

9	a)	Describe the working principle electrical strain gauges.	CO5	7 Marks
	b)	Explain about Berry strain gauge extensometer.	CO5	7 Marks
		(OR)		
10	a)	What are the methods of measuring temperature? Explain in detail about Thermopiles.	CO5	7 Marks
	b)	With a neat sketch, explain the dead weight gauge for pressure measurement.	CO5	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

REFRIGERATION AND AIR CONDITIONING

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	How is ideal reversed Carnot cycle modified to result in Bell-Coleman cycle?	CO1	7 Marks
	b)	The capacity of a refrigerator is 200TR when working between -6ºC and 25ºC. Determine the mass of ice produced per day from water at 25ºC. Also find the power required to drive the unit. Assume that the cycle operates on reversed Carnot cycle and latent heat of ice is 335KJ/Kg.	CO2	7 Marks

(OR)

2	a)	Explain the differences between heat engine, refrigerator and heat pump and find their COP'S.	CO1	7 Marks
	b)	Explain the working principle of bootstrap air cooling system.	CO1	7 Marks

UNIT-II

3	a)	Explain the Vapour Compression Refrigeration system and also show it on T-S, P-h diagrams.	CO1	6 Marks
	b)	A simple F_12 heat pump for space heating operated between 15 and 50^0C. The heat required to be pumped is 100MJ/hr. Determine: i) Dryness fraction of F_12 entering the evaporator. ii) The mass flow rate of refrigerant. iii) Discharge temperature assuming specific heat of vapour =0.8KJ/kg. iv) Theoretical piston displacement of compressor. v) Theoretical power required to run the compressor. vi) COP of the system.	CO3	8 Marks

(OR)

4	a)	How do you classify refrigerants?	CO1	7 Marks
	b)	Explain the nomenclature of refrigerants with some examples.	CO1	7 Marks

UNIT-III

5	a)	Explain the working principle of Li-Br vapour absorption refrigeration system.	CO4	8 Marks
	b)	Explain the working principle vortex tube.	CO1	6 Marks

(OR)

6	a)	Find the expression for mass of motive steam required for a steam jet refrigeration system.	CO1	8 Marks
	b)	Explain the principle of operation three fluid vapour absorption refrigeration systems.	CO1	6 Marks

UNIT-IV

7		A spray cooling coil is chosen to operate under the following conditions. Air inlet – 28^0C & 21^0C WBT. Air outlet temperature – 10^0C & 6^0C WBT. Amount of air flow – 2000m^3/min. The chilled water inlet and out temperature – 7^0 C & 12^0C. Find i) the cooling load on the coil. ii) Water flow rate through the coil.	CO5	14 Marks

(OR)

8	a)	Explain the following and represent it on psychometric chart. i) Cooling and dehumidification. ii) Heating and humidification. iii) Adiabatic saturation temperature. iv) Bypass factor.	CO1	10 Marks
	b)	Define Psychometry and show all psychometric properties on psychometric chart.	CO6	4 Marks

UNIT-V

9		Explain the following. i) Air – Air heat pump circuit. ii) Water – Air heat pump circuit.	CO1	14 Marks

(OR)

10		Define human comfort and explain the factors which affect the human comfort.	CO1	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

THERMAL ENGINEERING-II
[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Draw T-S and H-S diagram of reheat Rankine cycle with the help of circuit diagram and derive its efficiency.	CO1	7 Marks
	b)	In a Rankine cycle, the steam at inlet to turbine is dry saturated at a pressure of 35 bar and the exhaust pressure is 0.2 bar. Calculate pump work, turbine work, rankine efficiency and condenser heat flow. Assume flow rate of steam as 9.5kg/s.	CO2	7 Marks
		(OR)		
2	a)	Explain the working of Cochran boiler with a neat sketch.	CO1	7 Marks
	b)	Discuss about the essential features of good boiler.	CO1	7 Marks

UNIT-II

3	a)	Derive an expression for draught produced in terms of height of chimney, ambient and flue gas temperature. State clearly the assumptions made.	CO1	7 Marks
	b)	Find the height of chimney necessary to produce a draught of 30mm of water column. The atmospheric air temperature is 217°C. Air fuel ratio is 13.5. What will be the power required if induced draught fan is used for producing the above draught? Fuel consumption is 1500 kg/hr.	CO4	7 Marks
		(OR)		
4	a)	What is boiler draught and how it is produced by a chimney?	CO1	7 Marks
	b)	A boiler is equipped with a chimney of 30m height. The ambient temperature is 25°C. The temperature of flue gases passing through the chimney is 300°C. If the air flow is 20kg/kg of fuel burnt. Find: i) Draught produced. ii) The velocity of flue gases passing through chimney if 50% of the theoretical draught is lost in friction.	CO2	7 Marks

UNIT-III

5	a)	Derive the expression for maximum discharge through convergent divergent nozzle for steam.	CO1	7 Marks
	b)	Estimate the mass flow rate of steam In a nozzle with the following data. Inlet pressure and temperature =10 bar and 200°C, Back pressure =0.5 bar, Throat diameter =12mm.	CO5	7 Marks
		(OR)		
6	a)	Define the following terms. i) Diagram Efficiency. ii) Stage Efficiency. iii) Nozzle Efficiency.	CO1	6 Marks
	b)	Explain the working principle of pressure velocity compounding of impulse turbine with neat sketch.	CO1	8 Marks

UNIT-IV

7	a)	Give a comparison between Impulse Turbine and Reaction Turbine.	CO1	6 Marks
	b)	Derive an expression for maximum efficiency of 50% Reaction Turbine.	CO1	8 Marks
		(OR)		
8	a)	Explain the construction and working of, Edward's air pump.	CO1	8 Marks
	b)	A surface condenser is designed to handle 10,000kg of steam per hour. The steam enters at 0.08 bar and 0.9 dryness and the condenser leaves at the corresponding saturation temperature, the pressure is constant throughout the condenser. Estimate cooling water flow rate per hour if cooling water temperature is limited to 100°C.	CO5	6 Marks

UNIT-V

9	a)	Explain turbo jet working with neat diagram. Write the advantages and disadvantages of turbo jet engine.	CO1	7 Marks
	b)	A gas turbine unit has a pressure ratio of 6:1 and maximum cycle temperature of 610°C. The isentropic efficiencies of the compressor and turbine are 0.80 and 0.82 respectively. Calculate the power output in kilowatts of an electric generator geared to the turbine when the air enters the compressor at 15°C at the rate of 16 kg/s. Take C_p = 1.005 kJ/kg K and γ = 1.4 for the compression process, and take C_p = 1.11 kJ/kg-K and γ=1.333 for the expansion process.	CO2	7 Marks
		(OR)		
10	a)	Name the methods employed for improvement of thermal efficiency of open cycle gas turbine and discuss in detail.	CO1	7 Marks
	b)	A gas turbine unit receives air at 1 bar and 300 K and compresses it adiabatically to 6.2 bar. The compressor efficiency is 88%. The fuel has a heating valve of 44186 kJ/kg and the fuel-air ratio is 0.017 kJ/kg of air. The turbine internal efficiency is 90%. Calculate the work of turbine and compressor per kg of air compressed and thermal efficiency. For products of combustion, C_p = 1.147 kJ/kg K and γ = 1.333.	CO3	7 Marks

CODE No.: 16BT50306 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

HUMAN RESOURCE MANAGEMENT
[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I		
1	a)	Describe in brief the nature and scope for HR function in an organization. What are the indicators of its working in an organization?	CO1	7 Marks
	b)	Illustrate the significance of environmental scanning for effective management of human resources in an organization.	CO5	7 Marks
		(OR)		
2		Identify the need for HR planning? Explain the various steps to be considered in HR planning process.	CO3	14 Marks
		UNIT-II		
3	a)	Define job analysis. Describe the various approaches to job analysis in detail.	CO1	7 Marks
	b)	Explain in detail the internal and external sources of recruitment.	CO2	7 Marks
		(OR)		
4	a)	Elucidate the factors that traditionally governed the job design in industry. What problems have resulted from this approach?	CO2	7 Marks
	b)	What are the principal methods that can be used to analyze jobs? What method or methods would you use, if you are a human resource manager? Why?	CO2	7 Marks
		UNIT-III		
5		Explain different methods of training the employees. Suggest a suitable training method for salesmen of a heavy machine manufacturing organization.	CO4	14 Marks
		(OR)		
6		Write short notes on: i) Management development. ii) Career development.	CO1	14 Marks
		UNIT-IV		
7		Define the term industrial relations. Bring out its importance and also the parties and their roles in IR.	CO1	14 Marks
		(OR)		
8	a)	List the main causes of industrial disputes in India. Discuss the effects of industrial disputes.	CO1	7 Marks
	b)	Explain the salient features of Industrial Disputes Act.	CO1	7 Marks
		UNIT-V		
9	a)	Explicate the strategies to be followed by a HR department in improving ethical decision making in an organization.	CO6	7 Marks
	b)	"An HR manager who hopes to substantially alter ethical conduct of an organization is doomed to disappointment". Elaborate.	CO6	7 Marks
		(OR)		
10	a)	Outline the causes for industrial accidents. How can they be avoided?	CO5	7 Marks
	b)	Reflect on ISO safety standards and its significance in employee safety.	CO5	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

MECHATRONICS
[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is a mechatronic system? Mention the elements of a mechatronic system.	CO1	6 Marks
	b)	Compare and contrast the mechatronics designing method for controlling Water level in a Water tank with that of traditional designing method.	CO5	8 Marks

(OR)

2	a)	Explain in detail the mechatronics design process.	CO1	8 Marks
	b)	Explain the requirements of a control system.	CO1	6 Marks

UNIT-II

3	a)	Illustrate the working principle of LVDT in detail.	CO2	8 Marks
	b)	A strain gauge is bonded to a beam of 150mm long and having a cross sectional area of 5cm². Young's modulus for steel is 200GPa. The strain gauge has an unstrained resistance of 220Ω and a gauge factor of 2. When a load is applied, the resistance of gauge change by 0.015Ω. Find the change in length of the steel beam and the amount of force applied to the beam.	CO2	6 Marks

(OR)

4	a)	Explain the temperature measurement using thermocouples.	CO2	8 Marks
	b)	Discuss any method of speed control of DC motor. Explain one applications where DC motor can be used as an actuator.	CO2	6 Marks

UNIT-III

5	a)	Explain the high pass filter with neat circuit diagram.	CO3	8 Marks
	b)	State and discuss the importance of Nyquist sampling theorem.	CO1	6 Marks

(OR)

6	a)	Explain DAC using weighted resistor network system.	CO3	8 Marks
	b)	State the importance of Data Acquisition system with an example.	CO3	6 Marks

UNIT-IV

7	a)	Explain the principles and applications of Three Mode controller.	CO4	8 Marks
	b)	Discuss the advantages of Adaptive controllers.	CO4	6 Marks

(OR)

8	a)	Explain the PI and PD controllers.	CO4	8 Marks
	b)	A PI controller has an input voltage range of 0.4 – 2V and the output voltage range 0.10V, R_2= 160kΩ, R_1=8kΩ and C= 10 μF. Determine the values of gain K_p, K_i and proportional band of integration gain in %/(%s)	CO4	6 Marks

UNIT-V

9	a)	Design a mechatronic system to automate a car parking system.	CO1	8 Marks
	b)	Describe a method for automatic control of coolant temperature in an automobile.	CO1	6 Marks

(OR)

10	a)	Explain the problems involved in a tilting train. Design a system to overcome it.	CO1	8 Marks
	b)	Discuss the ethics to be followed in designing a mechatronic system	CO6	6 Marks

CODE No.: 16BT50401 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

DIGITAL COMMUNICATIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the principle of operation of DM Transmitter and Receiver with the block diagrams.	CO1	8 Marks
	b)	Find the optimum step size required to avoid slope overload distortion when an analog signal x(t)=10sin(2ϖx103t)is sampled at thrice of nyquist rate in a Delta Modulator.	CO3	6 Marks
		(OR)		
2	a)	Illustrate μ - law and A - law Companding techniques.	CO3	7 Marks
	b)	Outline the requirement of sampling of signal prior to transmission through digital communication system. Also explain the conditions for sampling rate to sample a signal for reconstruction.	CO3	7 Marks

UNIT-II

3	a)	Derive an equation for Thermal Noise Power in Delta Modulation system (DM).	CO2	8 Marks
	b)	Show that for each additional bit used in quantization, the signal to quantization noise ratio is quadrapuled.	CO2	6 Marks
		(OR)		
4		Compare and contrast the Noise Performance of PCM and DM transmission systems.	CO2	14 Marks

UNIT-III

5	a)	Implement a Correlator Receiver and also explain its principle of operation.	CO6	6 Marks
	b)	Derive the probability of error for ASK system.	CO2	8 Marks
		(OR)		
6	a)	Implement a system for generation and detection of M-ary QAM signals.	CO6	8 Marks
	b)	State and prove any two properties of Matched Filter.	CO1	6 Marks

UNIT-IV

7	a)	Define the channel capacity in terms of average signal-power and noise power.	CO1	5 Marks
	b)	A discrete message source is generating the message sequence [X] = [A B C D E F G H] with probabilities [P]=[0.50 0.15 0.15 0.08 0.08 0.02 0.01 0.01]. Find the Codewords using Shanon-Fano coding.	CO5	9 Marks
		(OR)		

8	a)	A transmitter has an alphabet of four letters[x_1 x_2 x_3 x_4] and the receiver has an alphabet of three letters [y_1 y_2 y_3 y_4]. The joint probability matrix is	CO5	9 Marks

$$P(X,Y)= \begin{array}{c} \\ x_1 \\ x_2 \\ x_3 \\ x_4 \end{array} \begin{array}{c} \begin{array}{ccc} y_1 & y_2 & y_3 \end{array} \\ \begin{bmatrix} 0.3 & 0.05 & 0 \\ 0 & 0.25 & 0 \\ 0 & 0.15 & 0.05 \\ 0 & 0.05 & 0.15 \end{bmatrix} \end{array}$$

Calculate all entropies and mutual information.

	b)	Define mutual information and explain the properties of mutual information.	CO1	5 Marks

UNIT-V

9	a)	Interpret the encoding and decoding principle in convolution code.	CO2	6 Marks
	b)	Explain the encoding of a message word using linear block codes with relevant expressions.	CO4	8 Marks

(OR)

10	a)	Estimate the advantages of convolutional codes over block codes.	CO2	6 Marks
	b)	Describe tree and trellis diagrams for decoding using Viterbi algorithm.	CO4	8 Marks

CODE No.: 16BT50402 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

MICROPROCESSORS AND MICROCONTROLLERS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Demonstrate how pipelining and segmentation were deployed in Intel 8086.	CO3	7 Marks
	b)	Draw the setup necessary to de-multiplex Intel 8086 address data buses. Why address and data buses of 8085 are multiplexed. Explain the need and how to de-multiplex them.	CO5	7 Marks
		(OR)		
2	a)	Derive Physical address generation scheme adopted in Intel 8086. Discuss the advantage of doing so.	CO3	7 Marks
	b)	Explore various loop related instructions. Present the conditions to continue and skip executing loops.	CO5	7 Marks

UNIT-II

3	a)	Contrast Minimum to Maximum modes of 8086 operation with suitable block diagrams	CO2	7 Marks
	b)	List the functionality of following pins in Intel 8086. i) HOLD. ii) ALE. iii) BHE. iv) Ready.	CO1	7 Marks
		(OR)		
4	a)	Explain the general BUS operation of 8086 microprocessor.	CO1	7 Marks
	b)	Illustrate the memory organization of 8086 microprocessor with a neat diagram.	CO2	7 Marks

UNIT-III

5	a)	Outline 8255A command word formats. Infer the special functionality of Port C when compared to other parallel ports.	CO1	7 Marks
	b)	Demonstrate deployment of RS232C standard for establishing serial link between near and far DTE and DCEs.	CO6	7 Marks
		(OR)		
6	a)	Explain the purpose of priority resolver in 8259A.	CO1	4 Marks
	b)	Model the setup necessary to interface DAC with Intel 8086.	CO6	10 Marks

UNIT-IV

7	a)	Contrast Microprocessors to Microcontrollers.	CO2	7 Marks
	b)	Recall Interrupt structure of Intel 8051 in detail.	CO1	7Marks
		(OR)		
8	a)	Draw 8051 Flag register and explain the function of each flag in it.	CO1	7 Marks
	b)	Compose an ALP to transfer a block of 8 bytes from Internal RAM at 20H to External RAM at 5400H.	CO4	7 Marks

UNIT-V

9	a)	Draw and explain 8051 Timer/Counter control logic.	CO1	7 Marks
	b)	Write ALP to create a square wave of 50% duty cycle on P1.5. Assume XTAL=11.0592 MHz.	CO4	7 Marks
		(OR)		
10	a)	Explain the interrupt structure of 8051 microcontroller.	CO1	7 Marks
	b)	Compose an ALP for 8051 to generate a symmetric square wave at P1.3.	CO4	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

VLSI DESIGN

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is threshold voltage V_T? Give the expression for threshold voltage V_T and discuss the relationship of body effect on threshold voltage.	CO2	7 Marks
	b)	Draw the voltage transfer characteristics curve of CMOS inverter. Explain the operation and obtain the expression for currents in various regions of operation.	CO1	7 Marks
		(OR)		
2	a)	Analyze the Drain and Transfer characteristics of n-Channel enhancement MOSFET.	CO2	7 Marks
	b)	With neat sketches, explain CMOS fabrication using P-well process.	CO1	7 Marks

UNIT-II

3	a)	What is a stick diagram? Draw the stick diagram and layout for a CMOS inverter.	CO1	8 Marks
	b)	What are the effects of scaling on V_T?	CO2	6 Marks
		(OR)		
4	a)	Derive an expression for the rise and fall time of a CMOS inverter delay.	CO2	8 Marks
	b)	List out the scaling factors for MOS circuits.	CO1	6 Marks

UNIT-III

5	a)	Implement a 4-bit ALU using adder as basic primitive block and explain how the arithmetic and logical operations are performed using adder element.	CO3	7 Marks
	b)	Explain the principle of working of a 4-bit carry-look ahead adder and hence draw the logical schematic used to obtain the generate and propagate signals.	CO1	7 Marks
		(OR)		
6	a)	Design logic for an ALU that can perform both logical and arithmetic operations.	CO1	7 Marks
	b)	Present the design approach for a Carry Select Adder with neat diagram.	CO3	7 Marks

UNIT-IV

7	a)	Appraise the core operation of SRAM core cell using appropriate diagram.	CO4	7 Marks
	b)	Discuss in detail about full custom design and semi custom design.	CO1	7 Marks
		(OR)		
8	a)	Suggest the FPGA routing techniques.	CO4	7 Marks
	b)	Explain the architecture of complex programmable logic devices.	CO1	7 Marks

UNIT-V

9	a)	Originate the basic principles of low power design.	CO6	7 Marks
	b)	Appraise the use of controllability and observability to test the CMOS circuits.	CO5	7 Marks
		(OR)		
10	a)	Suggest testing mechanisms for combinational circuits.	CO5	7 Marks
	b)	Identify the basic sources of errors in CMOS Circuit and how they are tested in synthesis process.	CO6	7 Marks

CODE No.: 16BT50404 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

ELECTRONIC MEASUREMENTS AND INSTRUMENTATION

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the working principle of shunt type ohmmeter with help of neat sketches.	CO1	6 Marks
	b)	A circuit was tuned for resonance by eight different students, and the value of resonant frequency in kHz were recorded as 532, 548, 543, 535, 546, 531, 543 and 536. Calculate: i) the arithmetic mean. ii) deviation from the mean. iii) average deviation. iv) standard deviation.	CO4	8 Marks
		(OR)		
2	a)	Define the following terms in the with respective to distribution of data. i) Mean value. ii) Deviation. iii) Average deviation. iv) Variance.	CO1	8 Marks
	b)	The resistance of a moving coil voltmeter is 12,000Ω. The moving coil has 100 turns and is 4 cm long and 3cm wide. The flux density in the air gap is 0.06Wb/m^2. Find the deflection produced by 300V if the spring control gives a deflection of one degree for a torque of 25 x 10^{-7} Nm.	CO4	6 Marks

UNIT-II

3	a)	Compare the performance of various types of temperature transducers.	CO2	8 Marks
	b)	Design a wire strain gauge with a steel structural member to measure a stress of 100MN/m^2. Assume the elasticity modulus of the steel as 200 GN/m^2.	CO3	6 Marks
		(OR)		
4	a)	Design a series and parallel type Q-meters to measure component value and Q-factor of a coil.	CO3	8 Marks
	b)	The output of an LVDT is connected to a 5V voltmeter through an amplifier whose amplification factor is 250. An output of 2mV appears across the terminals of LVDT when the core moves through a distance of 0.5mm. Calculate the sensitivity of the LVDT and that of the whole setup. The milli-voltmeter scale has 100 divisions and can read upto 1/5 of a division. Calculate the resolution of the instrument in mm.	CO2	6 Marks

UNIT-III

5	a)	Describe various oscilloscope probes and discuss various measurement effects.	CO1	7 Marks
	b)	Develop a technique to focus the electron beam in CRT using electrostatic field.	CO5	7 Marks
		(OR)		
6	a)	Explain the principle of operation of Sampling CRO with the help of required waveforms and block diagram.	CO1	7 Marks
	b)	Extend the wave analyzer to determine the frequency content of a signal and discuss the working principle with help of suitable diagrams.	CO5	7 Marks

UNIT-IV

7	a)	What is a recording device and classify them.	CO1	6 Marks
	b)	What are the types of tracing systems used in galvanometer type strip chart recorder?	CO1	8 Marks
		(OR)		
8	a)	With suitable diagram explain the working of an X-Y recorder.	CO1	8 Marks
	b)	Compare $3\frac{1}{2}$ and 4 digit displays.	CO2	6 Marks

UNIT-V

9	a)	What is voltage telemetering system and explain with help of diagrams?	CO1	6 Marks
	b)	Adopt a voltage telemetering system for measuring water level.	CO6	8 Marks
		(OR)		
10	a)	What is position telemetering system and explain with help of diagrams?	CO1	6 Marks
	b)	What are the applications of data acquisition system?	CO6	8 Marks

CODE No.: 16BT50442 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

MICROPROCESSORS AND INTERFACING

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I		
1	a)	How does the microprocessor differentiate between data and instruction?	CO1	4 Marks
	b)	Explain the architecture of microprocessors 8086.	CO4	10 Marks
		(OR)		
2		Draw and explain the timing diagram of memory Read and write cycle in minimum mode configuration.	CO5	14 Marks
		UNIT-II		
3	a)	Explain the requirement of a program counter, stack pointer and status flags in the architecture of 8086 microprocessor.	CO1	6 Marks
	b)	Interpret the Flag Register of 80686mp.	CO1	6 Marks
	c)	Describe the function of ALE.	CO1	2 Marks
		(OR)		
4	a)	Explain the addressing modes of 8086 with example.	CO5	10 Marks
	b)	Describe the functions of the following signals. i) Test. ii) Ready.	CO1	4 Marks
		UNIT-III		
5	a)	Explain the general BUS operation of 8086mp.	CO1	7 Marks
	b)	Explain the register organization of 8086mp.	CO1	7 Marks
		(OR)		
6	a)	Distinguish between the terms microprocessor, microcomputer and microcontroller. Discusses the evolution of microprocessor.	CO3	10 Marks
	b)	Discuss briefly about Pre-Fetch Queue in 8086mp.	CO3	4 Marks
		UNIT-IV		
7		Explain the memory organization of 8086mp with a neat diagram	CO1	14 Marks
		(OR)		
8	a)	Discuss the generation of 20 bit Physical Address using segment and offset Registers.	CO2	10 Marks
	b)	What are control flags? Name them.	CO1	4 Marks
		UNIT-V		
9	a)	What is maximum mode configuration? What are the control signals generated by the bus controller 8288 in maximum mode configuration?	CO3	7 Marks
	b)	Draw and explain the Timing Diagram of Read and Write cycle in maximum mode configuration.	CO3	7 Marks
		(OR)		
10		Discuss the following Signals. i) S2, S1, S0. ii) HLD, HLDA. iii) RQ0/GT0, RQ1/GT1 iv) QS0, QS1. v) AD0-AD15. vi) DEN.	CO1	14 Marks

CODE No.: 16BT50501 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

COMPUTER NETWORKS

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Compare Optical Fibers and Copper Cable guided transmission mediums.	CO2	4 Marks
	b)	Explain ISO OSI reference model with a neat diagram.	CO1	10 Marks
		(OR)		
2	a)	What is meant by topology? And explain the topologies of the network.	CO1	7 Marks
	b)	Radio antennas often work best when the diameter of the antenna is equal to the wave length of the radio. Reasonable antennas range from 1cm to 5 meters in diameter. What frequency range does this occur?	CO4	7 Marks

UNIT-II

3	a)	Describe random access protocols with their merits and demerits.	CO1	7 Marks
	b)	Compare Fast and Gigabit Ethernet Technologies.	CO2	7 Marks
		(OR)		
4		A bit stream 10011101 is transmitted using standard CRC method. The generator polynomial is x^3+1. Illustrate the actual bit string transmitted. Suppose that the third bit from the left is inverted during transmission. Illustrate that this error is detected at the receiver's end.	CO4	14 Marks

UNIT-III

5	a)	Draw and explain about Header format of Internet Protocol version 4.	CO1	7 Marks
	b)	A network on the Internet has a subnet mask of 255.255.240.0. What is the maximum number of nodes it can handle?	CO4	7 Marks
		(OR)		
6	a)	What is meant by Anycast Routing? Explain with an example	CO1	7 Marks
	b)	Recall various Network Layer Design issues.	CO1	7 Marks

UNIT-IV

7	a)	Compare TCP congestion control mechanisms.	CO2	7 Marks
	b)	What is the total size of the minimum TCP MTU, including TCP and IP overhead but not including data link layer overhead?	CO2	7 Marks
		(OR)		
8	a)	A client uses UDP to send data to server. The data length is 16 bytes. Calculate the efficiency of this transmission at the UDP level (ration of useful bytes to total bytes)	CO4	7 Marks
	b)	Briefly explain the following Timers in TCP. i) Retransmission Time Out. ii) Persistence Timer.	CO1	7 Marks

UNIT-V

9	a)	Summarize the principles of application layer protocols.	CO2	7 Marks
	b)	Explain in detail about Simple Mail Transfer Protocol.	CO1	7 Marks

(OR)

10	a)	Describe the Distribution of Domain Name System (DNS) Name Space.	CO1	7 Marks
	b)	Consider DNS servers.	CO2	7 Marks

i) Compare two approaches, obtaining a name from a file in a remote machine and from a DNS server of the local ISP

ii) Describe the relationship between a domain name taken from a DNS server and an IP address subnet.

CODE No.: 16BT50502 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

LINUX PROGRAMMING

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write a linux program to display environment variable.	CO3	7 Marks
	b)	Compare getopt and getopt_long system calls.	CO2	7 Marks
		(OR)		
2	a)	Construct a program to access environment variables using putenv and getenv function.	CO3	7 Marks
	b)	Explain how linux operating system provides more security than any other operating system.	CO1	7 Marks

UNIT-II

3	a)	Explain control structures of shell programming with suitable examples.	CO1	10 Marks
	b)	Write short notes on shell script arguments.	CO3	4 Marks
		(OR)		
4	a)	Illustrate with example the process of creation and execution of shell script.	CO5	7 Marks
	b)	Write a short note on **I/O Redirection** operators.	CO3	7 Marks

UNIT-III

5	a)	Write a shell program the first 128 bytes of the standard input to standard output.	CO3	7 Marks
	b)	Differentiate the system calls unlink, link and symlink.	CO2	7 Marks
		(OR)		
6	a)	Write a shell program to copy the contents from one file to another file character by character.	CO3	6 Marks
	b)	Discuss the system calls: i) chmod. ii) chown. iii) mkdir and rmdir. iv) chdir and getcwd.	CO1	8 Marks

UNIT-IV

7	a)	Discuss wait and sleep command with example.	CO1	7 Marks
	b)	Illustrate the need for sigaction function. Give example.	CO5	7 Marks
		(OR)		
8	a)	Discuss the advantages and drawbacks of using threads.	CO1	4 Marks
	b)	Develop linux based application using threads.	CO6	10 Marks

UNIT-V

9	a)	Define pipe and specify the usage of popen and pclose commands.	CO1	7 Marks
	b)	Develop a program that sends output to an external program.	CO3	7 Marks
		(OR)		
10	a)	Design a program that reads all the data from pipe.	CO4	4 Marks
	b)	Illustrate with example the usage of pipes across fork.	CO5	10 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

COMPUTER VISION

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define model of an Image color.	CO1	2 Marks
	b)	Discuss in detail about Diffuse and Specular term of a model of image color.	CO2	12 Marks
		(OR)		
2	a)	Explain in detail about Human color perception.	CO1	10 Marks
	b)	Describe about Black body radiators.	CO1	4 Marks

UNIT-II

3	a)	Derive an algorithm for Non-parametric texture synthesis and explain synthesis by sampling local models.	CO4	8 Marks
	b)	Discuss Learned Sparse coding in detail.	CO2	6 Marks
		(OR)		
4	a)	Describe about Block Matching 3D (BM3D) in image denoising.	CO1	4 Marks
	b)	Discuss how to Synthesize the textures and to fill holes in images by sampling local models.	CO2	10 Marks

UNIT-III

5	a)	Define Clustering. Briefly explain its importance.	CO1	7 Marks
	b)	Explain about K-means clustering.	CO1	7 Marks
		(OR)		
6	a)	Discuss basic Clustering methods with algorithms. Discuss two major issues of clustering.	CO2	10 Marks
	b)	Describe Watershed algorithm.	CO1	4 Marks

UNIT-IV

7	a)	Define classifying the images of single objects.	CO1	2 Marks
	b)	Discuss about Image classification systems in detail.	CO2	12 Marks
		(OR)		
8	a)	Explain Fixed sets of classes with an example.	CO1	6 Marks
	b)	Explain about Large numbers of classes in detail.	CO1	8 Marks

UNIT-V

9	a)	Define Information retrieval.	CO1	2 Marks
	b)	List the basic technologies from Information retrieval and describe each.	CO1	12 Marks
		(OR)		
10	a)	Explain about Locality Sensitive Hashing.	CO1	6 Marks
	b)	Discuss about approximate Nearest neighbors by KD-trees.	CO2	8 Marks

CODE No.: 16BT50504 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

DATA COMMUNICATIONS

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe serial and parallel transmission mode.	CO1	5 Marks
	b)	Discuss the following term with suitable example: i) Signal to noise ratio. ii) Electrical noise. iii) Information Capacity.	CO2	9 Marks
		(OR)		
2	a)	List and briefly explain the basic functions of the five components of a data communication circuit.	CO1	5 Marks
	b)	Illustrate various analog modulation systems.	CO4	9 Marks

UNIT-II

3	a)	Contrast the advantages and disadvantages of digital transmission.	CO2	7 Marks
	b)	Differentiate Time-division multiplexing and Frequency division multiplexing.	CO2	7 Marks
		(OR)		
4	a)	What is the purpose of a sample and hold circuit?	CO1	4 Marks
	b)	Give a brief outline about T1 digital carrier system with neat diagram.	CO2	10 Marks

UNIT-III

5	a)	Can you write in your own words about the following terms? How they relate to radio wave propagation? i) Reflection. ii) Refraction. iii) Diffraction. iv) Interference.	CO3	8 Marks
	b)	Describe the working principles of cordless telephone and caller Id.	CO1	6 Marks
		(OR)		
6	a)	What do you think about geosynchronous satellite?	CO1	7 Marks
	b)	Illustrate the basic functions of a telephone set.	CO5	7 Marks

UNIT-IV

7	a)	List the various data communications character codes.	CO1	10 Marks
	b)	Write the characteristics and applications of cellular and cordless technologies.	CO3	4 Marks
		(OR)		
8	a)	Discuss about the following terms: i) Cell Splitting. ii) Sectoring. iii) Segmentation. iv) Dualization.	CO2	8 Marks
	b)	What is the difference between a soft and a hard handoff?	CO1	6 Marks

UNIT-V

9		Give a brief note on the seven components that make up a two-point data communication circuit.	CO2	14 Marks
		(OR)		
10		Write a brief note on ITU-T modem recommendations.	CO3	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

BIOMEDICAL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define the following. i) Action potential. ii) Resting potential. iii) Propagation rate.	CO1	6 Marks
	b)	Discuss the problems encountered while measuring physiological parameters for a living system.	CO4	8 Marks
		(OR)		
2		List the various bio chemical electrodes and explain any one in detail.	CO1	14 Marks

UNIT-II

3		Sketch the cardio vascular circulation and explain each block in detail.	CO3	14 Marks
		(OR)		
4		Analyze the importance of electromagnetic flow meters with neat sketches.	CO2	14 Marks

UNIT-III

5	a)	Demonstrate central nervous system with a neat diagram and explain different parts of it and their activity.	CO1	7 Marks
	b)	Identify suitable electrodes for EEG and explain each block of EEG recording setup.	CO5	7 Marks
		(OR)		
6	a)	Describe 10-20 electrode system used in EEG based on standard norms.	CO6	10 Marks
	b)	Write a brief notes on Pneumatograph Ventilators.	CO1	4 Marks

UNIT-IV

7	a)	Differentiate internal and external Defibrillators.	CO1	7 Marks
	b)	Compare Internal and external pacemakers.	CO1	7 Marks
		(OR)		
8		Analyze the procedure of Hemodialysis with a suitable block diagram.	CO3	14 Marks

UNIT-V

9		Show the block diagram of CT scan and explain different blocks in it in detail.	CO1	14 Marks
		(OR)		
10		Choose the relevant technique to identify nerve damage in biological system with a neat Structure and explain each block in detail.	CO5	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

INDUSTRIAL INSTRUMENTATION – II

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is the need for Humidity measurement in industries? List some applications, safety issues that may arise due to improper selection of sensor in an industrial environment. Suggest one method of Humidity measurement and explain it.	CO6	7 Marks
	b)	Describe the construction and working principle of radioactive type densitometer.	CO1	7 Marks

(OR)

2	a)	Name some units for density. Describe the construction and working principle of pressure head type densitometer.	CO1	7 Marks
	b)	Define specific viscosity. Explain the construction and working principle of friction tube viscometer.	CO1	7 Marks

UNIT-II

3	a)	A level sensing mechanism magnetic float with 5 normally open contacts. They are placed 2cm apart and are connected using 100, 200, to 500Ω resistors respectively to an op-amp and given a constant voltage of -5V to other end of contact. An op-amp is used in inverting configuration with a feedback resistance of 1kΩ and non inverting terminal connected to ground. Assume that only one of the 5 contacts is closed at any given time. i) What is the measurement level range for the above set up? ii) Minimum change in level that could be detected. iii) What is the range of the output voltage? iv) What is the voltage when the level has increased by 6cm from base?	CO4	7 Marks
	b)	Measurement of level could be done based on differential pressure. Explain the construction, working principle of level measurement based on differential pressure.	CO1	7 Marks

(OR)

4	a)	Design a level sensing mechanism to measure level of a tank with the following requirements using resistive technique. Resolution of 1cm. Range of 10cm. Diameter of the tank is 10cm with clean liquid. Draw a suitable diagram to represent the design and signal conditioning circuit for given specifications.	CO3	7 Marks
	b)	Why is level measurement based on lasers/light based not good for measurement of level of cleaner liquids? Explain the construction and working principle of laser/fiber optic based level measurement.	CO2	7 Marks

UNIT-III

5	a)	Select an appropriate flow sensing mechanism for measurement of flow without causing pressure loss. Justify your sensor selection and explain its principle using a neat sketch.	CO5	7 Marks
	b)	Write 3 units of Flow rate. Describe the construction and working principle of calorimetric flow meter.	CO1	7 Marks

(OR)

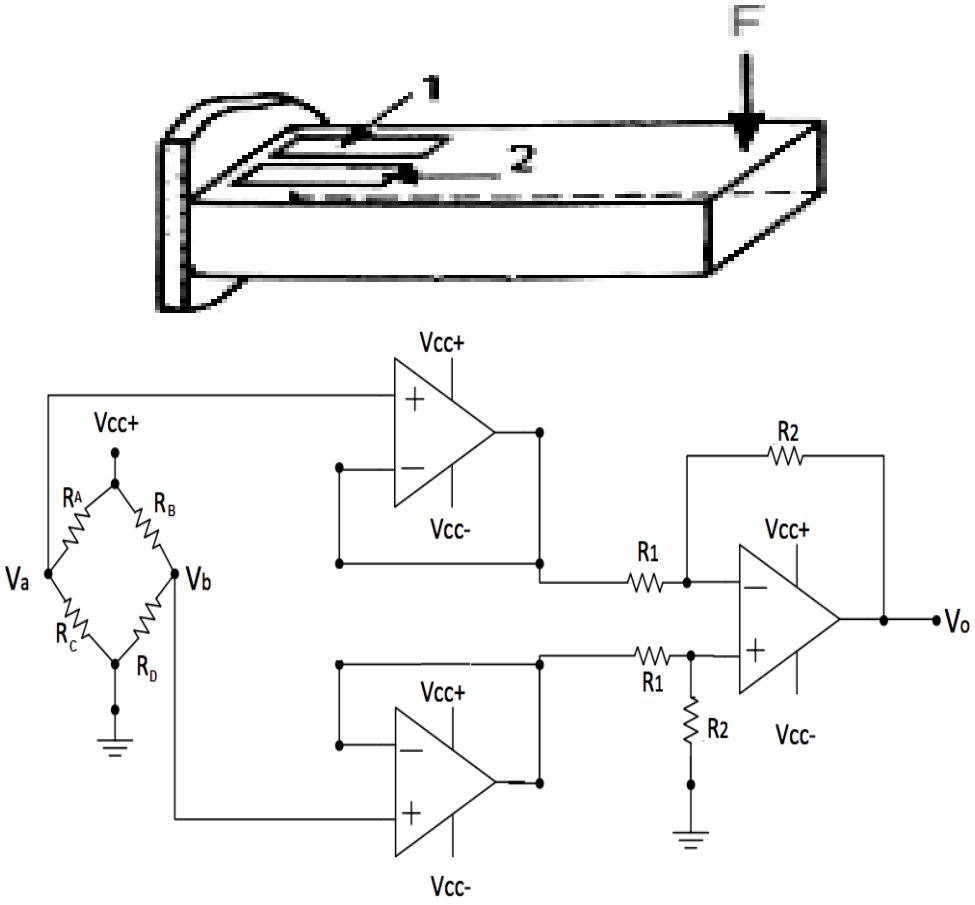
6	a)	List different Flow sensing mechanisms. Present an analysis of different mechanisms, their merits and demerits.	CO2	7 Marks
	b)	Show how a liquid bridge mass flow meter could be used for measurement of flow rate using a neat sketch and appropriate representation.	CO1	7 Marks

UNIT-IV

7	a)	Design a signal conditioning circuit to convert a 15V to 20V to a -5V to +5V DC range.	CO3	7 Marks
	b)	With a suitable example, explain voltage to current converter.	CO1	7 Marks

(OR)

8	a)	How is a charge amplifier different from electrometer amplifier? Explain the working of charge amplifier with a neat sketch.	CO2	7 Marks
	b)	Two strain gages are placed on top a cantilever beam to measure force applied. Place them in a Wheatstone bridge (RA, RB, RC, RD) and connect the output of the bridge to an instrumentation amplifier with voltage followers as the input stage and differential amplifier as output stage with feedback R_2 = 10KΩ and input R_1 = 5KΩ. Assume initial strain gage value is 100Ω and changed value RA and RB as 110Ω. Assume 1K as the other resistors for completing the wheatstone bridge. Find the output voltage.	CO4	7 Marks



UNIT-V

9	a)	List different proximity sensor types and compare their merits and demerits.	CO2	7 Marks
	b)	What is the need for grounding in industries? Explain concept of Earth Ground. Give some examples of current return path symbols.	CO1	7 Marks
		(OR)		
10	a)	What is the need for circuit in industries? List some applications and safety issues that may arise due to improper selection of circuit breakers in an industrial environment. Compare circuit breakers to that of fuses and explain.	CO2	7 Marks
	b)	Discuss about digital outputs and encoders relating to proximity sensors.	CO1	7 Marks

CODE No.: 16BT51003 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

PRINCIPLES OF COMMUNICATIONS

[Electrical and Electronics Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain and differentiate AM, DSB-SC and SSB-SC with spectrum plots.	CO5	10 Marks
	b)	What is the need for modulation?	CO1	4 Marks
		(OR)		
2	a)	Derive the expression for AM wave and draw its spectrum.	CO2	10 Marks
	b)	What are the limitations in electrical communication system?	CO1	4 Marks

UNIT-II

3	a)	With the help of block diagram, explain generation of FM using Armstrong method.	CO3	10 Marks
	b)	Explain the differences between AM and FM.	CO1	4 Marks
		(OR)		
4	a)	If the waveform $\text{Cos}(\omega_c t + k \sin \omega_m t)$ is phase modulated carrier, sketch the waveforms of the modulating signal if the carrier is frequency modulated.	CO2	7 Marks
	b)	Explain the generation of FM using Narrow band frequency modulated method.	CO5	7 Marks

UNIT-III

5	a)	What is multiplexing and explain Time division multiplexing.	CO5	8 Marks
	b)	Explain the importance of TDM in communication.	CO2	6 Marks
		(OR)		
6		Explain different types of pulse modulation techniques with neat diagram.	CO2	14 Marks

UNIT-IV

7	a)	What are the effects of quantization and error in quantization?	CO6	7 Marks
	b)	Explain the generation of Delta modulation signal.	CO1	7 Marks
		(OR)		
8		With suitable block diagram, explain the operation of Adaptive delta modulation and demodulation scheme.	CO5	14 Marks

UNIT-V

9	a)	An event has six possible outcomes with the probabilities 0.5, 0.25, 0.125, 1/16, 1/32, 1/32. Find the entropy of the system. Also find rate of information if there are 16 outcomes per second.	CO4	7 Marks
	b)	Generate a cyclic code of message length 4 and code length 7.	CO1	7 Marks
		(OR)		
10	a)	A discrete memory less source has an alphabet of seven symbols whose probabilities of occurrence are as described here	CO4	10 Marks

Symbol	S_0	S_1	S_2	S_3	S_4	S_5	S_6
Probability	0.25	0.25	0.125	0.125	0.125	0.0625	0.0625

	b)	Compute the Huffman code of this source.	CO6	4 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

COMPUTER ORGANIZATION AND ARCHITECTURE

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I		
1		Design an algorithm to perform binary multiplication. Also suggest the hardware required.	CO5	14 Marks
		(OR)		
2	a)	With a suitable example, demonstrate the signed 2's complement addition and subtraction. Implement it with minimal hardware.	CO6	8 Marks
	b)	Compare signed magnitude vs 2's complement binary addition and subtraction. Give comments.	CO2	6 Marks
		UNIT-II		
3		Design the arithmetic logic shift unit and derive the function table.	CO3	14 Marks
		(OR)		
4	a)	Show how computer registers are connected to a common bus.	CO5	7 Marks
	b)	Design a one stage logic circuit to implement different logic functions.	CO3	7 Marks
		UNIT-III		
5	a)	Which flag is used only in BCD operations? Explain the operation of the flag with suitable example.	CO1	7 Marks
	b)	Explain about the rotate instructions of 8085.	CO1	7 Marks
		(OR)		
6	a)	Explain about the following pins of 8085. i) ALE ii) $\overline{RD}$. iii) IO/ $\overline{M}$. iv) INTR.	CO1	7 Marks
	b)	With suitable examples, discuss about 8085 microprocessor instructions used for data manipulation.	CO1	7 Marks
		UNIT-IV		
7	a)	Describe the 8085 interrupt process.	CO1	7 Marks
	b)	Differentiate between maskable and non-maskable interrupts. Give example.	CO2	7 Marks
		(OR)		
8	a)	Write an 8085 program to perform subtraction of two bytes by accessing data from memory and store the result in memory.	CO3	7 Marks
	b)	A memory system of size 16KB is to be designed for an 8085 microprocessor based computer with memory chips each of size 4KB. Suggest the number of chips required. Also, give the memory map of each chip assuming the starting address 8000H.	CO4	7 Marks
		UNIT-V		
9	a)	With a neat sketch, differentiate between SRAM and DRAM.	CO1	7 Marks
	b)	Analyze the memory hierarchy in terms of speed, size and cost.	CO2	7 Marks
		(OR)		
10	a)	Define instruction Hazard. Explain instruction hazard with a suitable case study.	CO2	7 Marks
	b)	Show the organization of bit cells in a memory chip with 16 locations of 8 bits each.	CO3	7 Marks

CODE No.: 16BT51041 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

SENSORS AND SIGNAL CONDITIONING

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I		
1	a)	What are 'Sensors' and 'Transducers', and what the role of each in a measuring system?	CO1	7 Marks
	b)	List out the factors for selection of Transducer and also discuss about the various classification of transducers.	CO2	7 Marks
		(OR)		
2		Discuss the principle of operation of an instrument used for the measurement of strain with relevant sketch and also derive the expression for Gauge factor.	CO5	14 Marks
		UNIT-II		
3	a)	Discuss in detail about capacitor microphone.	CO1	7 Marks
	b)	Design a transducer for the measurement of linear displacement.	CO3	7 Marks
		(OR)		
4		With a neat sketch, analyze the operation of Electromagnetic Sensors.	CO2	14 Marks
		UNIT-III		
5	a)	Describe the construction and operation of thermocouples.	CO5	7 Marks
	b)	Explain the construction of a photo-voltaic cell and mention its uses.	CO1	7 Marks
		(OR)		
6		Evaluate the generation of electricity with piezoelectric materials also explain in detail about Photo conductive transducers.	CO4	14 Marks
		UNIT-IV		
7	a)	Compare the shaft and optical encoders.	CO1	7 Marks
	b)	Discuss in detail about the smart sensors.	CO1	7 Marks
		(OR)		
8		Describe how fiber optic transducers are used for: i) measurement of temperature. ii) measurement of liquid level.	CO6	14 Marks
		UNIT-V		
9		Draw the block diagram of Instrumentation amplifier and explain each block in detail	CO3	14 Marks
		(OR)		
10		Write short notes on the following. i) Chopper Amplifier. ii) Carrier Amplifier.	CO3	14 Marks

CODE No.: 16BT51201 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

COMPUTER GRAPHICS AND MULTIMEDIA

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		List the operating characteristics of the following display technologies i) Raster refresh systems. ii) Vector refresh systems.	CO1	14 Marks
		(OR)		
2		Explain in detail the Cohen Sutherland algorithm for line clipping.	CO1	14 Marks

UNIT-II

3		Summarize on:		
		i) Polygon clipping.	CO1	7 Marks
		ii) Viewing Transformation.	CO1	7 Marks
		(OR)		
4	a)	Develop composite transformation of two successive translations for three dimensional objects.	CO3	7 Marks
	b)	Develop the transformation matrix that transforms the given square ABCD to half its size with center still remaining at same position. The coordination of square are A(1,1), B(3,1), C(3,3), D(1,3) and center at (2,2).	CO4	7 Marks

UNIT-III

5		Classify following visible surface detection algorithms. i) Depth Buffer method. ii) Scan line Method.	CO2	14 Marks
		(OR)		
6		Demonstrate the following in detail with an example. i) 3D Scaling. ii) 3D Reflections. iii) 3D Shear.	CO1	14 Marks

UNIT-IV

7	a)	Explain about 8 – bit color images.	CO1	6 Marks
	b)	State and explain Nyquist theorem.	CO1	8 Marks
		(OR)		
8	a)	List the advantages of digital video.	CO1	6 Marks
	b)	Compare NTSC and SECAM video standards.	CO2	8 Marks

UNIT-V

9		Discuss in detail about JPEG compression techniques.	CO4	14 Marks
		(OR)		
10	a)	Explain adaptive Huffman coding with an example.	CO1	8 Marks
	b)	Develop code for string “College” using Shanon-Fano algorithm.	CO5	6 Marks

CODE No.: 16BT51202 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

OBJECT ORIENTED ANALYSIS AND DESIGN

[Computer Science and Engineering, Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I		
1		Digital Imaging and Communications in Medicine (DICOM) is a standard, for handling, storing, printing, and transmitting information in medical imaging. It includes a file format definition and a network communications protocol. The communication protocol is an application protocol that uses TCP/IP to communicate between systems. DICOM files can be exchanged between two entities that are capable of receiving image and patient data in DICOM format. Describe all the stereotypes that are used in dependency relationship for above case study.	CO4	14 Marks
		(OR)		
2	a)	List the advantages of Object Oriented software development over Traditional software development. Explain.	CO1	7 Marks
	b)	Compare and contrast features of Object Oriented software development over Traditional software development.	CO2	7 Marks
		UNIT-II		
3	a)	Design and apply the modeling techniques of a class diagram for student registration system.	CO3	7 Marks
	b)	Design and apply the modeling techniques of a object diagram for user login control.	CO3	7 Marks
		(OR)		
4	a)	Design and apply the modeling techniques of class diagram for Railway reservation system.	CO3	9 Marks
	b)	Derive the different instances for Railway reservation system.	CO3	5 Marks
		UNIT-III		
5	a)	Compare various flows of events in basic activity diagram and activity diagram with swim lanes.	CO5	7 Marks
	b)	Construct and explain the exceptional messages in sequence diagram.	CO5	7 Marks
		(OR)		
6		Design a model for online bookshop communication system through activity diagram using swim lanes.	CO4	14 Marks
		UNIT-IV		
7	a)	Define a state and list the parts of state with suitable examples.	CO1	7 Marks
	b)	List the steps involved to model multiple flows of control and IPC.	CO1	7 Marks
		(OR)		
8	a)	Describe about interprocess communication in advanced behavioral modeling.	CO1	4 Marks
	b)	Describe about different kinds of events with examples.	CO1	4 Marks
	c)	Illustrate common modeling techniques for time and space.	CO1	6 Marks

UNIT-V

9	a)	Describe the common modeling techniques for component diagram.	CO2	7 Marks
	b)	Compare and contrast Component and Deployment diagrams with suitable examples.	CO2	7 Marks
		(OR)		
10	a)	Design a model for hospital management through a component diagram.	CO5	5 Marks
	b)	Write the common modeling techniques for deployment diagram.	CO2	9 Marks

CODE No.: 16BT51203 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

WEB TECHNOLOGIES
[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the creation of "Mouseovers" in JavaScript. Give examples to change the Size and Color of the Text in a Web Page.	CO5	7 Marks
	b)	Explain the following suitable example. i) Spell-check. ii) Content Editable. iii) Custom data attributes. iv) Offline web applications.	CO1	7 Marks
		(OR)		
2	a)	Explain the frames and table tags of HTML with suitable example.	CO1	7 Marks
	b)	Design a web page to drag and drop an object on a web browser using a mouse.	CO5	7 Marks

UNIT-II

3	a)	Design a web page to enroll student details including Name, Id, Address, Mobile No. and e-Mail id.	CO2	7 Marks
	b)	Compare and contrast JavaScript and JQuery features.	CO2	7 Marks
		(OR)		
4	a)	Design a web page that display credit card type and then validate the entered card number according to the card type.	CO6	7 Marks
	b)	Summarize the properties and methods of JavaScript String object.	CO2	7 Marks

UNIT-III

5	a)	Develop a mobile optimized webpage using the following. i) Glyphicons. ii) Navigation bar.	CO5	7 Marks
	b)	Classify different layouts in bootstrap.	CO2	7 Marks
		(OR)		
6	a)	Develop a mobile optimized webpage using the following. i) Alerts. ii) Tool bars and button group.	CO5	7 Marks
	b)	Develop a web page using nested grid column layout	CO5	7 Marks

UNIT-IV

7	a)	Build a PHP code to retrieve variables passed using GET and POST super global variables.	CO3	7 Marks
	b)	Explain the PHP code embedding procedure into web pages.	CO1	7 Marks
		(OR)		
8	a)	Build a PHP Page to read User Name and Favorite Programming language from the html form.	CO3	7 Marks
	b)	Explain the various methods offered by PHP to output data into browser. Write a PHP code to demonstrate each method.	CO1	7 Marks

UNIT-V

9		Develop a PHP page that reads user details like name, id, gender, date of birth, address, phone no. and email id and then store the same into MySQL database.	CO6	14 Marks

(OR)

10	a)	Develop a PHP code to perform the following: i) To fetch employee records from MySQL database. ii) To Update employee salary by 10% whose experience greater than 15 years.	CO6	10 Marks
	b)	List and explain transaction methods of MySQL.	CO1	4 Marks

CODE No.: 16BT51241 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

OBJECT ORIENTED PROGRAMMING

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is byte code? What are instance variables?	CO1	7 Marks
	b)	List categories of operators supported by JAVA.	CO2	7 Marks
		(OR)		
2	a)	What is a class? Explain the syntax for declaring a class with an example.	CO1	4 Marks
	b)	Why does JAVA not support goto statements? What is the alternative way of defining goto statement behavior in Java?	CO1	5 Marks
	c)	Explain in detail about constructor overloading with an example.	CO1	5 Marks

UNIT-II

3	a)	Create an abstract class ***Accounts*** with the following details: Data members: i) Balance ii) AccountNumber iii) AccountHoldersName iv) Address Methods: i) Withdrawl() – abstract ii) Deposit()- abstract iii) Display() to show the balance of the account number Create a subclass of this class SavingsAccount and add the following details: Data members: i) RateofInterest Methods: i) calculateAmount() ii) display() t display rate of interest with new balance and full account holder details Create another subclass of the Account class, i.e. CurrentAccount with the following Data members: i) overdraftLimit Method: i) display() to show overdraft limit along with the full account holder details Create objects of these two classes and call their methods. Use appropriate constructors.	CO6	7 Marks
	b)	Design an interface to implement Stack ADT.	CO3	7 Marks
		(OR)		
4	a)	How can we access an interface from another interface?	CO1	7 Marks
	b)	What is a package? Explain it with an example and also write how to import packages.	CO1	7 Marks

UNIT-III

5	a)	What are the Exception types? What is a finally block? When and how is it used? Give a suitable example.	CO1	7 Marks
	b)	Design a java program showing the actions form three threads. Use runnable interface to create the threads. Make sure that the main thread always executs last.	CO3	7 Marks

(OR)

6	a)	Create a user-defined exception named checkArgument to check the number of arguments passed through command line. If the number of arguments is less than five, throw the checkArgument exception, else print the addition of all the five numbers.	CO4	7 Marks
	b)	What is multitasking? Is multi threading a form of multitasking?	CO1	7 Marks

UNIT-IV

7		Design a Java applet with the following components. Add four labels with Text only, image only, image and text with text displayed at top center, image only at right position. Add four buttons to the Applet - Buttonl with text "Try Me", Button2 with text in the right position. Button3 with the corn image and text in the left position and Button4 with grapes image. Whenever a button is clicked, display a message about the selection in a text field. Make this text field non-editable, so that user cannot change its content. Add keyboard mnemonic to button 3 so that the button can be selected by pressing Alt + C in the keyboard. Add a tooltip to button4, so that it will be displayed when mouse hovers over the button.	CO5	14 Marks

(OR)

8		Design a java program to perform the following using linked list. i) Remove a node form the list. ii) Insert a node at the end of the list. iii) Insert a node anywhere in the existing list. iv) Remove a node anywhere in the existing list.	CO3	14 Marks

UNIT-V

9	a)	What are servlets? What are the three methods that are central to the life cycle of a servlet?	CO1	7 Marks
	b)	Design a servlet which displays current system date and time.	CO3	7 Marks

(OR)

10	a)	Design a java program to implement Mouse and keyboard events.	CO1	12 Marks
	b)	What are the tasks of a servlet?	CO1	2 Marks

CODE No.: 16BT51501 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

COMPILER DESIGN

[Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define language translator and explain functions of language translators.	CO1	7 Marks
	b)	How the lexical analyzer does identifies the tokens. Explain with an example.	CO1	7 Marks
		(OR)		
2		Give the LEX specification to perform lexical analysis for the following pattern in C: identifiers, commands, numerical constituents, arithmetic operators.	CO5	14 Marks

UNIT-II

3		Explain the basic operations of Shift Reduce Parser and perform Shift Reduce Parsing of the input string "**id1 + id2 * id3**" by conserving the grammar E→E+ E E→E*E E→id	CO3	14 Marks
		(OR)		
4	a)	Explain a method how ambiguous grammar's can be parsed with an example.	CO1	7 Marks
	b)	Construct CLR Parsing table for the following grammar. S→CC C→cC/d.	CO3	7 Marks

UNIT-III

5	a)	Give the advantages and disadvantages of Name Equivalence? Explain through the examples.	CO1	7 Marks
	b)	Distinguish Synthesized and inherited attributes in semantic analyzers.	CO1	7 Marks
		(OR)		
6	a)	Write a syntax directed translator scheme to translate the following grammarfor declaration statement. D→TL T→int T→red L→L$_D$id L→id	CO4	6 Marks
	b)	Discuss Static and Dynamic checking of Types.	CO1	8 Marks

UNIT-IV

7	a)	Write intermediate code for the following source code:
		for i from 1 to 10 do
		for j from 1 to 10 do
		a[i,j] = 0.0;
		for i from 1 to 10 do
		a[i,i] = 1.0;
			CO4	7 Marks

	b)	Enlist any four common three address instruction forms	CO1	7 Marks
		(OR)		

8	a)	Explain the role of intermediate code generator in compilation process.	CO1	7 Marks
	b)	Give the translation scheme for converting the assignments into three address code.	CO4	7 Marks

UNIT-V

9	a)	Obtain the directed acyclic graph for the expression. $x + x*(y + z) + (y + z)*w$.	CO2	7 Marks
	b)	Discuss a strategy of how CPU registers are allocated while generating machine code.	CO6	7 Marks

(OR)

10	a)	Give the code generation process for operations.	CO1	7 Marks
	b)	Explain the code generation algorithm. Generate the code for the following expression: $w = (a - b) + (a - c) + (a - c)$	CO2	7 Marks

CODE No.: 16BT51541 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

MODELING AND SIMULATION

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Explain Queuing Simulation in spread sheet, by simulating a single server queue. CO1 7 Marks

b) A Taxi company operates one vehicle during the 9:00 A.M. to 5:00 P.M. period. Currently, consideration is being given to the addition of a second vehicle to the fleet. The demand for taxis follows the distribution shown: CO5 7 Marks

Time Between Calls (Minutes)	15	20	25	30	35
Probability	0.14	0.22	0.43	0.17	0.04

The distribution of time to complete a service is as follows:

Service Time (Minutes)	5	15	25	35	45
Probability	0.12	0.35	0.43	0.06	0.04

Simulate 5 individual days of operation of the current system and of the system with an additional taxicab. Compare the two systems with respect to the waiting times of the customers and any other measures that might shed light on the situation.

(OR)

2 a) List and explain concepts in discrete event simulation. CO1 7 Marks

b) Describe manual simulation using event scheduling. CO1 7 Marks

UNIT-II

3 a) Explain the following discrete distributions. CO1 10 Marks

i) Bernoulli distribution. ii) Binomial distribution.

b) A recent survey indicated that 82% of single women aged 25 years old will be married in their lifetime. Using the binomial distribution, find the probability that two or three women in a sample of twenty will never be married. CO4 4 Marks

(OR)

4 a) Explain the following discrete distributions. CO1 10 Marks

i) Negative binomial distribution. ii) Poisson distribution.

b) The Hawks are currently winning 0.55 of their games. There are 5 games in the next two weeks. What is the probability that they will win more games than they lose? CO4 4 Marks

UNIT-III

5 a) Describe steady state behavior of infinite-population Markovian Models. CO1 9 Marks

b) A two-runway (one runway for landing, one runway for taking off) airport is being designed for propeller-driven aircraft. The time to land an airplane is known to be exponentially distributed, with a mean of 1.5 minutes. If airplane arrivals are assumed to occur at random, what arrival rate can be tolerated if the average wait in the sky is not to exceed 3 minutes? CO3 5 Marks

(OR)

6	a)	The primary long-run measures of performance of queueing systems are the long-run time-average number of customers in the system (L) and in the queue (L_Q), the long-run average time spent in system (w) and in the queue (w_Q) per customer, and the server utilization, or proportion of time that a server is busy (ρ). Considering the G/G/c/N/K queueing system. Deduce necessary equations for average time spent in system per customer.	CO4	9 Marks
	b)	A tool crib has exponential interarrival and service times and serves a very large group of mechanics. The mean time between arrivals is 4 minutes. It takes 3 minutes on the average for a tool-crib attendant to service a mechanic. The attendant is paid $10 per hour and the mechanic is paid $15 per hour. Would it be advisable to have a second tool-crib attendant?	CO4	5 Marks

UNIT-IV

7	a)	With an example, explain linear congruential method for generating random numbers.	CO2	9 Marks
	b)	Use the linear congruential method to generate a sequence of three two-digit random integers and corresponding random numbers. Let $X_0 = 27$, a= 8, c = 47, and m = 100.	CO4	5 Marks

(OR)

8	a)	State and describe the properties of random numbers.	CO1	9 Marks
	b)	Develop a random-variate generator for a random variable X with the pdf. $f(x) = \begin{cases} e^{2x} & -\infty < x \leq 0 \\ e^{-2x} & 0 < x \leq \infty \end{cases}$	CO4	5 Marks

UNIT-V

9		Explain why sample mean and sample variance are used to estimate the parameters of a hypothesized distribution.	CO1	14 Marks

(OR)

10		Explain multivariate and time-series input model.	CO1	14 Marks

CODE No.: 16BT60402 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

DIGITAL SIGNAL PROCESSING
[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Solve the difference equation $y(n)y(n) = x(n) + \frac{5}{6}y(n-1) - \frac{1}{6}y(n-2)$ for the input sequence $x(n) = \begin{cases} 3^n & n \geq 0 \\ 0 & n < 0 \end{cases}$. Assume that initial condition $y(n) = 0$ for $n < 0$.	CO2	7 Marks
	b)	Categories the classification of diecrete time signals with examples.	CO1	7 Marks
		(OR)		
2	a)	Check the following systems described with difference equations for linearity, shift invariance, stability and causality: i) $y(n) + y(n+1) = n\,x\,(n)$.	CO2	7 Marks
	b)	Define the symmetric and anti symmetric signals with examples.	CO1	7 Marks

UNIT-II

3	a)	Derive the relation between DFT and Z-transform.	CO3	7 Marks
	b)	Compute 8-DFT of a sequence $x(n)$={1, 1, 1, 1. 1, 1, 0, 0} and sketch magnitude and phase spectrum.	CO5	7 Marks
		(OR)		
4	a)	Develop the DIT FFT algorithm with neat sketch for $N = 8$.	CO3	7 Marks
	b)	Synthesize $x(n)$ of $X(K)$ ={4, 2, 0, 4}using IDFT.	CO4	7 Marks

UNIT-III

5	a)	For the system function $H(z) = \frac{z^2 + z + 1}{(z + 0.5)(z + 0.4)}$, obtain the parallel from of realization.	CO4	7 Marks
	b)	Mention the important features of IIR filter.	CO1	7 Marks
		(OR)		
6	a)	Synthesize the characteristics of butterworth prototype filter and give its ploe zero locations in Z plane.	CO4	7 Marks
	b)	Discuss briefly about analog to analog transformation in analog filters.	CO1	7 Marks

UNIT-IV

7	a)	Derive an expression for frequency response of Linear phase FIR filter when impulse response is symmetry having N odd no. of samples.	CO2	7 Marks
	b)	Prove that linear phase characteristics can be achieved if impulse response is symmetric with conditions $h(N\text{-}1\text{-}n) = h(n)$ centered at $\alpha=(N-1)/2$.	CO5	7 Marks
		(OR)		
8	a)	Distinguish advantages and disadvantages of FIR and IIR filters.	CO2	7 Marks
	b)	Apply windowing technique to Design a linear phase FIR highpass filter using hamming window with cut off frequency Wc=0.8π rad/sample and N=7.	CO5	7 Marks

UNIT-V

9	a)	Write a short note on Memory Access schemes in P-DSPs.	CO1	7 Marks
	b)	Explain Von Neumann and Harvard architecture with a neat sketch.	CO1	7 Marks
		(OR)		
10	a)	Elaborate any three special purpose addressing mode in DSP processors.	CO1	7 Marks
	b)	Discuss in detailed about pipelining of instruction execution in DSP processor.	CO1	7 Marks

CODE No.: 16BT60404 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

IMAGE PROCESSING
[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Apply Hadamard Transform and derive the kernel for N=4.	CO5	9 Marks
	b)	Prove the Properties of DCT.	CO4	5 Marks
		(OR)		
2	a)	Define the following. i) 4-Adjacency. ii) 8-Adjacency. iii) m-Adjacency.	CO1	6 Marks
	b)	Using Slant Transform derive the kernel for N=4.	CO5	8 Marks

UNIT-II

3	a)	What are the different types of high pass filters used in image enhancement?	CO1	7 Marks
	b)	What are the tools used in Unsharp masking in frequency domain?	CO5	7 Marks
		(OR)		
4		Write a short notes on: i) High-boost filtering. ii) Unsharp Masking. iii) Median filter.	CO1	14 Marks

UNIT-III

5	a)	Derive degradation transfer function using constrained least squares filtering approach.	CO3	7 Marks
	b)	Distinguish between various Filters present in spatial domain and explain the need of filtering techniques in image processing.	CO6	7 Marks
		(OR)		
6	a)	What is the need of Image restoration in Modern digital image processing?	CO6	7 Marks
	b)	What are the solutions to de-noise the image corrupted with salt and pepper noise using Median filter?	CO3	7 Marks

UNIT-IV

7	a)	Write about the following: i) Interpixel Redundancy. ii) Psychovisual Redundancy.	CO1	6 Marks
	b)	Distinguish between various Image Compression Models used in image processing.	CO2	8 Marks
		(OR)		
8	a)	Compare different types of image redundancies used in image Compression.	CO2	5 Marks
	b)	Explain the need for channel encoder and decoder.	CO1	9 Marks

UNIT-V

9	a)	Describe point, line and edge detection techniques.	CO1	7 Marks
	b)	Design an Algorithm to convert RGB color model to HSI color model.	CO3	7 Marks
		(OR)		
10	a)	Appraise adaptive thresholding to differentiate between Foreground and background.	CO4	7 Marks
	b)	Design Masks to detect Point, line and edge detection in image processing.	CO3	7 Marks

CODE No.: 16BT60503 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Supplementary Examinations June - 2019

WIRELESS NETWORKS
[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I		
1	a)	Find the capacity of a WLAN with Voice and Data.	CO4	6 Marks
	b)	Examine the working principles of TDMA.	CO2	8 Marks
		(OR)		
2	a)	Provide solution for receiver buffer size and packet error rate in voice over IP applications.	CO3	10 Marks
	b)	List the advantages of the CDMA access techniques.	CO1	4 Marks
		UNIT-II		
3	a)	Classify the issues of mobility management.	CO2	6 Marks
	b)	Build and explain the components of Location management.	CO2	8 Marks
		(OR)		
4	a)	Explain about paging mechanism and blanket paging.	CO1	7 Marks
	b)	List and explain the traditional handoff techniques.	CO1	7 Marks
		UNIT-III		
5	a)	Discuss about the Historical overview of the LAN.	CO1	8 Marks
	b)	List out the challenges for implementation of wireless LANs.	CO2	6 Marks
		(OR)		
6	a)	Discuss about the Home Networking Technologies and its uses.	CO2	7 Marks
	b)	Identify the challenges for the design of a HAN.	CO1	7 Marks
		UNIT-IV		
7	a)	How GPRS does provides variety of data rates.	CO2	6 Marks
	b)	Build the Reference architecture of GPRS and its application for mobile devices.	CO6	8 Marks
		(OR)		
8	a)	With neat sketch, explain the Protocol layers in GPRS.	CO1	10 Marks
	b)	What is GPRS-136? How does it differ from GPRS?	CO1	4 Marks
		UNIT-V		
9	a)	Discuss about Basic architecture of Bluetooth scattered topology.	CO2	7 Marks
	b)	Write Search algorithm for synchronization process.	CO1	7 Marks
		(OR)		
10	a)	Analyze the architecture of the Home RF System.	CO2	10 Marks
	b)	Apply Piconets in Medical and Home Applications	CO6	4 Marks

CODE No.:10BT50501 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2018

DESIGN AND ANALYSIS OF ALGORITHMS

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain Kruskal's algorithm with an example.
b) Distinguish between Eulerian Graph and Hamiltonian Graph.

2. a) Write and explain the control abstraction for Divide and Conquer.
b) Suggest refinements to merge sort to make it in-place.

3. a) Explain Dijkstra's shortest path with an example.
b) Explain the Strassen's matrix multiplication concept with an example.

4. a) Solve the following 0/1 Knapsack problem using dynamic programming.
M = 6, n = 3, $(w_1,w_2,w_3) = (2,3,3)$, $(p_1, p_2, p_3) = (1,2,4)$.
b) Write an algorithm of all pairs shortest path problem.

5. a) Write the pseudo-code of DFS and explain with the help of a graph.
b) What is Cook's algorithm?

6. a) Write a short note on Optimal Binary Search Trees.
b) Explain Big Oh, Big Omega and Big Theta notations.

7. a) Explain the method of reduction to solve TSP problem using Branch and Bound.
b) Explain the principles of LIFO Branch and Bound.

8. Give a brief note on Cooks theorem.

CODE No.:10BT60202 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2018

POWER SEMICONDUCTOR DRIVES

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the closed loop operation of DC motors with a neat block diagram.
b) A 220V, 1500 r.p.m, 10A separately excited DC motor is fed from a single-phase full converter with ac source voltage of 230V, 50Hz, R_a = 2 Ω. Conduction can be assumed to be continuous. Calculate firing angle for:
i) Half the rated motor torque and 500 r.p.m ii) Rated motor torque and 1000 r.p.m.

2. The speed of a separately excited DC motor is controlled by means of a 3-phase semi converter from a 3-phase 415V, 50Hz supply. The motor constants are inductance 10mH; resistance 0.9Ω and armature constant 1.5v/rad/s. Calculate speed of the motor at a torque of 50Nm, when the converter is fired at 45^0. Neglect losses in the converter.

3. Explain in detail the dynamic braking and Regenerative operation for:
i) DC separately excited. ii) DC series motors.

4. a) Discuss with the suitable diagrams I quadrant and II quadrant choppers.
b) A 220V, 24A, 100 r.p.m, separately excited DC motor has an armature resistance of 2Ω. Motor is controlled by a chopper with frequency of 500Hz and source voltage of 230V. Calculate the duty ratio for 1.2 times the rated torque and 500 r.p.m.

5. Draw the following AC voltage controllers for varying the speed of a 3-phase induction motor and discuss the following.
i) Star connected controller.
ii) Delta connected controller.

6. a) With the help of block diagram, explain the closed loop control of static scherbius drive.
b) Explain the operation of static Kramer drive.

7. a) Discuss the VSI method of speed control of synchronous motor describe the operation of the converter with waveforms
b) Write short notes on load commutated CSI fed synchronous motor.

8. a) With the help of power circuits, explain about the converters used for SRM.
b) Write short notes on modes of operation of SRM drive.

CODE No.:10BT60303 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2018

HEAT TRANSFER

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. Derive general conduction equation in cylindrical coordinates system.

2. a) What are the types of fins?
b) Consider a furnace wall (k = 1 W/m°C) of thickness 50cm is to be insulated with a material (k = 0.08 W/m °C). The temperature of inner and outer surface furnace wall are 1350°C and 50°C. For heat loss should not exceed 750W/m^2, what should be the thickness of insulation?

3. a) Explain Lumped system and its analysis.
b) Consider a spherical potato (k = 7 W/m°C, $\alpha=1.5\times10^{-5}m^2/s$) of diameter 8cm initially at uniform temperature of 25°C, dropped in to boiling water of 100°C with an average heat transfer coefficient of 5000 W/m^2 °C.
Determine Time required to reach 80°C.

4. a) State and explain Buckingham π theorem.
b) What do you mean by characteristic length or Equivalent diameter?

5. a) Differentiate natural and forced convection.
b) Calculate the pressure drop of oil at mean temperature of 40°C flows in a pipe of 3cm diameter, 50m long with 1m/s speed.

6. a) What are regimes of boiling and explain them with diagram.
b) Steam at 0.2 bar condenses on the outer surface of a 0.75m long, 50cm outer diameter horizontal tube maintained at a uniform temperature 40°C. Calculate condensation rate and heat transfer.

7. a) Define NTU.
b) Derive an expression for LMTD of counter flow heat exchanger.

8. a) Explain the following terms:
i) Absorptivity. ii) Reflectivity. iii) Transmissivity.
b) A 70mm thick metal plate with a circular hole of 35mm diameter along the thickness is maintained at a uniform temperature 250°C. Find the loss of energy to the surroundings at 27°C, assuming the two ends of the hole to be parallel disks and the metallic surfaces and surroundings have black body characteristics.

CODE No.:10BT60305 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2018

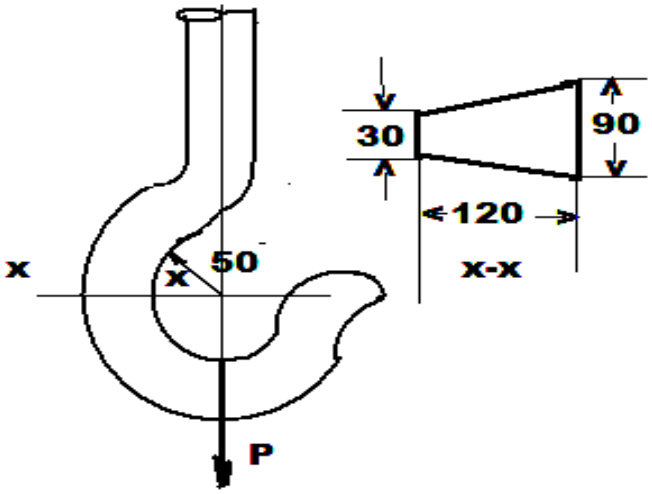
DESIGN OF MACHINE ELEMENTS-II

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. A crane hook having an approximate trapezoidal cross-section is shown in the figure below. It is made of plain carbon steel 45C8 (S_{yt} = 380 N/mm^2) and the factor of safety is 3.5. Determine the load carrying capacity of the hook.



2. a) Differentiate between differential screw and compound screw.
b) What is self locking property of threads and where it is necessary?

3. An electric motor drives an exhaust fan. A fan leather belt is to be used. The following data are known:

	Motor pulley	Fan pulley
Diameter	400mm	1600mm
Angle of wrap	2.5 radian	3.78 radian
Coefficient of friction	0.3	0.25
Speed	700rpm	
Power transmitted	22.5kW	

The belt is 5mm thick and the permissible stress is 2.3 N/sq.mm. Calculate the width of the belt.

4. a) Write short note on classifications and different types of antifriction bearings.
b) The rolling contact ball bearing are to be selected to support the overhung countershaft. The shaft speed is 720 r.p.m. The bearings are to have 99% reliability corresponding to a life of 24000 hours. The bearing is subjected to an equivalent radial load of 1 kN. Consider life adjustment factors for operating condition and material as 0.9 and 0.85 respectively. Find the basic dynamic load rating of the bearing from manufacturer's catalogue specified at 90% reliability.

5. Design a journal bearing for a centrifugal pump from the following data :
Load on the journal = 20 000 N; Speed of the journal = 900 r.p.m.; Type of oil is SAE 10, for which the absolute viscosity at 55°C = 0.017 kg / m-s; Ambient temperature of oil = 15.5°C; Maximum bearing pressure for the pump = 1.5 N / mm2. Calculate also mass of the lubricating oil required for artificial cooling, if rise of temperature of oil be limited to 10°C. Heat dissipation coefficient = 1232 W/m2/°C.

6. Design a side or overhung crankshaft for a 250mm x 300 mm gas engine. Weight of the flywheel is 30 kN and the explosion pressure is 2.1 N/mm². The gas pressure at the maximum torque is 0.9N/mm², when the crank angle is 35° from I.D.C. The connecting rod is 4.5 times the crank radius.

7. A closely coiled helical spring is made of 10 mm diameter steel wire, the coil consisting of 10 complete turns with a mean diameter of 120 mm. The spring carries an axial pull of 200 N. Determine the shear stress induced in the spring neglecting the effect of stress concentration. Determine also the deflection in the spring, its stiffness and strain energy stored by it if the modulus of rigidity of the material is 80 kN/mm².

8. Derive the expression for the radius of neutral axis of a curved beam with:
i) rectangular cross section ii) trapezoidal section

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2018

DIGITAL SIGNAL PROCESSING

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Electronics and Control Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. Find the frequency response and impulse response of the DTLTI described as **y(n) = y(n-1)+y(n-2)+x(n-1)**.

2. a) Find DFT of the sequence **x(n) = {11,10,16,18}** using direct method.
b) State and prove Time-reversal, Circular frequency shift and complex conjugate properties of DFT.

3. Given $x(n) = 2^n$ and N=8, find X(k) using DIFFFT radix-2 algorithm.

4. a) Derive the relation between Z transform and DFS
b) Realize the system **y(n) = y(n-1) + 2y(n-2) + x(n)** using direct form II realization.

5. Design a Chebyshev filter with a maximum pass band attenuation of 3.5 dB at Ω_p= 30rad/sec and stop band attenuation of 25dB at Ω_s= 50rad/sec.

6. a) Discuss about characteristics of linear phase FIR filters.
b) What are the effects of windowing?

7. a) Explain decimation of sampling rate by an integer factor D and derive spectra for decimated signal.
b) Discuss on sampling rate conversion of rational factor I/D

8. Write short notes on:
i) Signal compression. ii) Discrete multi-time transmission of digital data.

CODE No.:10BT60501 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2018

THEORY OF COMPUTATION

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Define finite automaton and write about any two applications of FA.
b) Design a deterministic finite automata accepting the language that accepts the set of all strings with three consecutive 0's over the alphabet {0, 1}.

2. a) Write a procedure to convert NFA with ε-transition to NFA without ε-transitions.
b) Design Moore machine to determine the residue mod 4 for each binary string treated as integer.

3. a) Construct Regular grammar G generating the regular set represented by a* b(a+b)*.
b) Prove that L = {WW / WE (a+b)*} is not regular.

4. a) Obtain a CFG to generate unequal number of a's and b's.
b) Obtain a CFG to obtain balanced set of parentheses. (i.e every left parentheses should match with the corresponding right parentheses).

5. a) Show that a PDA that accepts by final state and PDA that accepts by empty store are equivalent.
b) Construct a PDA equivalent to the grammar S→ aAA, A→ aS/ b.

6. a) Define deterministic PDA and explain with an example.
b) Construct a pushdown automata for the language with set of palindromes over alphabet $\{a,b\}$.

7. a) Explain about 2-way Turing machines.
b) Explain about Church's Hypothesis.

8. a) Discuss about P and NP class of problems.
b) Explain about universal tuning machine.

CODE No.:10BT61202 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2018

COMPUTER NETWORKS

[Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. Describe the following with suitable diagrams:
   a) Compare connection oriented and connectionless Services
   b) Draw the OSI/ISO reference model
   c) Network application layer software

2. a) What is coaxial cable? Explain different types of coaxial cable.
   b) Write short notes on mobile telephone system.

3. Given the data word 10100111 and the divisor 10111
   i) Show the generation of codeword at the sender site. (using binary division)
   ii) Show the checking of the codeword at the receiving site.(assume no error)

4. a) What is ALOHA? Differentiate between pure and slotted ALOHA.
   b) Write the flowchart of CSMA.

5. a) Differentiate between datagram subnet and virtual circuit subnet.
   b) What are the techniques used to achieve the good QOS?

6. a) Explain how UDP supports CRC encoding process.
   b) Briefly explain usage of different flags in TCP header.

7. a) What is a Domain Name System? List and explain different types of domain names.
   b) Explain the operation of E-mail service.

8. a) Explain about Transposition techniques.
   b) Explain substitution methods.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations December - 2018

PRINCIPLES OF COMPILER DESIGN

[Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What is the concept of input buffering? Explain it with an example.
b) What is the role regular expression in lexical analyzer? Explain, how lexical analyzer is generated using LEX.

2. a) What are the difficulties in top down parsing? Explain in detail.
b) Consider the following grammar.
S → (L) |a
L → L, S |S
Construct leftmost derivations and parse trees for the following sentences:
i) (a,(a,a))
ii) (a,((a,a),(a,a))).

3. a) What is handle pruning? Explain.
b) Describe about LR grammars.

4. a) Give a translation scheme for case statement.
b) Write short notes on various intermediate code forms.

5. Write an algorithm to perform the table lookup and insertion operation for hashed symbol table.

6. a) What is heap storage allocation? Explain in detail.
b) Explain about implicit and explicit storage requests.

7. a) Explain reducible and non-reducible flow graphs with an example.
b) Explain natural loops and inner loops of a flow graph with an example.

8. a) Explain the concept of object code forms.
b) Generate optimal machine code for the following 'C' program.
main()
{int i, a[10];

CODE No.:10BT40503 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2019

PRINCIPLES OF PROGRAMMING LANGUAGES

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What are the major concepts of programming languages?
b) Discuss about virtual machines and programming environments.

2. a) Explain the characteristics of sub program.
b) What is meant by short circuit evaluation? Explain.

3. a) Explain pointers, operations on pointers, pointer problems and implementation of pointer and reference types.
b) What are reference variables in C++? Explain their use with an example.

4. a) Describe about scope and life time of a variable.
b) Explain the design issues of functions and user defined overloaded operators.

5. a) Explain concurrency control in detail.
b) What is Thread? Explain Java and C# threading mechanism.

6. a) What are the design goals of logic programming language? Discuss prolog basic elements.
b) Discuss the exception handling mechanism in Ada, C++ and Java.

7. a) Describe the semantics of COND and LET.
b) Explain and elaborate the static-scoped functional programming language:ML.

8. a) What are the concepts of Python, PERL and PHP?
b) Discuss in detail about Module Library.

CODE No.:10BT50423 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2019

PRINCIPLES OF COMMUNICATIONS

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What are the types of communications? Explain.
b) List and explain any four properties of Fourier transform.

2. a) What is the need for modulation?
b) Explain the operation of envelop detector with a neat circuit diagram.

3. a) With the help of block diagram, explain generation of FM wave using Armstrong method.
b) Draw the spectrum of WBFM and explain the effect of modulation index on the spectrum.

4. a) Define the sampling rate. Derive the sampling theorem.
b) Write differences between PWM and PPM.

5. a) Derive an expression for signal to Quantization noise ratio for PCM receiver.
b) Calculate the expression for optimum gain in DPCM.

6. a) Derive an expression for baud rate in FSK system.
b) Explain the mechanism of generating and detecting QAM signals.

7. a) State and prove properties of mutual information.
b) A source has an alphabet $\{\mathbf{a_1, a_2, a_3, a_4}\}$ with corresponding probabilities $\{0.1, 0.2, 0.3, 0.4\}$. Find entropy of the source, average length of the code.

8. a) Explain Linear Block codes.
b) State and explain the Convolutional codes with examples.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2019

HEAT TRANSFER

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. Derive an expression for the heat conduction equation in cartesian coordinate system.

2. a) Derive the one dimensional steady state heat conduction equation without internal heat generation in cylindrical coordinates.
b) The inner surface of a plane brick wall is at 60^0C and the outer surface is at 35^0C. Calculate the rate of heat transfer per m^2 of surface area of the wall, which is 220mm thick. The thermal conductivity of the brick is 0.51W/m^0C.

3. a) Define Biot number and explain its significance.
b) An aluminum alloy plate of 4mm thick at 200^0C is suddenly quenched into liquid nitrogen which is at -183^0C. Find the time required for the plate to reach the temperature of -70^0C. The plate dimensions are 40cm x 40cm, C_p = 0.8kJ/kgK, $\rho = 3000kg/m^3$. Take h = 5000 W/m^2K.

4. a) Explain significance of Nusselt number.
b) Find the condition of flow at distance of 20cm leading edge of flat plate, if air at 25^0C flows on it at 35m/s speed.

5. a) Explain the concept of velocity and thermal boundary layers.
b) Water entering at 10^0C is heated to 40^0C in the tube of 0.02 m ID at a mass flow rate of 0.01 kg/s. The outside of the tube is covered with an insulated electric heating element that produces a uniform heat flux of 15000 W/m^2 over the surface. Determine:
i) reynolds number.
ii) heat transfer coefficient.
iii) length of the pipe needed for a 30^0C increase in average temperature.

6. a) Discuss various regimes of Pool boiling.
b) A horizontal tube of 50mm diameter with a surface temperature of 34^0C is exposed to steam at 0.2 bar. Estimate the condensation rate and heat transfer rate per unit length of the tube.

7. a) Define NTU.
b) Derive an expression for LMTD of counter flow heat exchanger.

8. Explain the following:
i) Black body and Grey body.
ii) Specular and diffuse reflector.
iii) Radiosity and irradiation.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2019

DIGITAL SIGNAL PROCESSING

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Electronics and Control Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What do you understand by linear convolution?
b) What is the condition for system stability?

2. a) Find DFT of the sequence x(n) = {11,10,16,18} using direct method.
b) State and prove Time-reversal, Circular frequency shift and Complex conjugate properties of DFT.

3. a) What is the need of FFT in digital signal processing?
b) Draw the flow graph of a two point DFT for a decimation in time decomposition.

4. Write properties of the Z transform.

5. Design a Chebyshev filter with a maximum pass band attenuation of 2.5 dB at Ω_p= 20rad/sec and stop band attenuation of 30dB at Ω_s= 20rad/sec.

6. a) Discuss about characteristics of linear phase FIR filters.
b) What are the effects of windowing?

7. With neat diagram and supportive derivation, explain multirate signal processing using two techniques.

8. Write short notes on:
i) Trans multiplexer. ii) Signal compression.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2019

DIGITAL COMMUNICATIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Draw the block diagram of a digital communication system and explain each block.
b) Describe the differential pulse code modulation system and mention its advantages.

2. a) Explain the delta modulation system and mention its drawbacks.
b) Derive the SNR in a PCM system.

3. a) Describe the QPSK modulation and demodulation system.
b) Explain the operation of a DEPSK system and distinguish it from a DPSK system.

4. a) Derive the probability of error for a base band binary data transmission system.
b) Describe the coherent reception of binary data transmission system using correlation receiver.

5. a) Explain the following terms.
i) Average Information. ii) Entropy.
b) Explain about Mutual Information and its properties.

6. a) State and prove Shanon source coding theorem.
b) A discrete source emits one of 5 symbols once every millisecond with probabilities 1/2, 1/4, 1/8, 1/16, 1/16 respectively. Compute the Huffman coding of each symbol and hence find its efficiency.

7. Explain matrix description of linear block codes. The generator matrix for a (6, 3) block code is given below. Find all code vectors of this code.

$$G = \begin{matrix} 1\,0\,0\,1\,1\,0 \\ 0\,1\,0\,0\,1\,1 \\ 0\,0\,1\,1\,0\,1 \end{matrix}$$

8. a) Explain the decoding of convolutional codes using exhaustive search method.
b) Discuss the Veterbi algorithm for decoding of convolutional codes.

CODE No.:10BT60404 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2019

MICROPROCESSORS AND MICROCONTROLLERS

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Electronics and Control Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. Explain in detail about the architecture and different registers of 8085 processor.

2. Explain the architecture of Intel 8086 with the help of a block diagram.

3. a) List the differences between the 8085 and 8086 processors.
b) State any three instructions in 8086 used for arithmetic and logical operations.

4. Explain the interfacing of a stepper motor with a processor.

5. a) Differentiate synchronous and asynchronous communication.
b) Explain the function RS232C in data transmission.

6. a) Differentiate polling and handshaking policies.
b) Write a note on interrupt vector table.

7. a) List the hardware features of 8051 microcontroller.
b) Explain Internal RAM composition in 8051 microcontroller.

8. What are the different modes available in the operation of a programmable timer?

CODE No.:10BT61001 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2019

OPTOELECTRONIC AND LASER INSTRUMENTATION

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Briefly explain about different modes of operation and their properties in optical fibers.
b) Derive the expression for the numerical aperture of the fiber.

2. a) Write a short note on:
i) Coupling of laser diode to fiber.
ii) Coupling of LED to fiber.
b) List the advantages of splices and connectors.

3. a) Discuss in detail about polarization maintaining fibers.
b) With a neat diagram, explain in detail about measurement of pressure using fiber optic sensors.

4. a) Discuss in detail properties of lasers and modes of lasers.
b) Explain in detail about solid lasers and liquid lasers.

5. a) With a neat diagram, explain about Lasers in Weather Monitoring.
b) Explain with neat diagram, how lasers are used in low power measurement.

6. Explain how laser instruments are useful for the following applications.
i) Plastic Surgery. ii) Oncology. iii) Removing tumors.

7. a) Explain the terms coherence requirements and resolution in connection with hologram.
b) Write short notes on recording and reconstruction of Fourier transform hologram.

8. a) Explain the mechanism of Acoustic-optic modulator.
b) Explain the mechanism of Electro-optic modulator.

CODE No.:10BT61002 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2019

BIOMEDICAL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What are the energy limitations in physiological measurement techniques?
b) Describe the working of cardiovascular system with a neat diagram.

2. a) Explain the way in which a neuronal spike is evoked and transmitted from one neuron to another neuron using a neat diagram.
b) Differentiate sensory nerves and motor nerves.

3. a) Discuss various types of Bio chemical electrodes and give their applications.
b) Distinguish between external and internal electrodes and give some examples.

4. a) Explain the indirect method of blood pressure measurement.
b) Describe the working principle of phonocardiograph.

5. a) Explain about nervous system of human body.
b) Discuss about electrode placement for EEG recording.

6. a) Discuss about microwave diathermy.
b) Explain about external pacemaker.

7. Explain the principle of operation of pneumotachograph.

8. a) Explain the working of Magnetic resonance imaging with the help of neat sketch.
b) Write a short note on Ultrasound waves in medicine.

CODE No.:10BT61202 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations May - 2019

COMPUTER NETWORKS

[Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. Explain TCP/IP Model in detail.

2. Differentiate guided and unguided media with examples.

3. Discuss in detail about error correction using Hamming method with a numerical example.

4. a) What is ALOHA? Differentiate between pure and slotted ALOHA.
b) Write the flowchart of CSMA.

5. a) Differentiate adaptive and non adaptive routing algorithms.
b) Explain about IPv6 header format.

6. How does the TCP achieve reliability in unreliable inter network? Narrate it.

7. a) Write short notes on WWW with suitable diagram.
b) Distinguish between application layer and transport layer in OSI/ISO model.

8. Explain about Public Key Cryptography.

CODE No.:14BT5HS01 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

MANAGERIAL ECONOMICS AND PRINCIPLES OF ACCOUNTANCY

[Civil Engineering, Mechanical Engineering, Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Define Managerial Economics. Discuss the nature and scope of Managerial Economics. 14 Marks

(OR)

2 What is elasticity of Demand? Explain the factors influencing elasticity of Demand 14 Marks

UNIT-II

3 What is a production function? How does a long run production function differ from a short run production function? 14 Marks

(OR)

4 What is meant by opportunity cost? Explain its economic significance in business decisions. 14 Marks

UNIT-III

5 What do you mean by perfect competition? How price and output is determined in short and long run in perfect competition? 14 Marks

(OR)

6 Define capital. What are the different sources of capital? Explain. 14 Marks

UNIT-IV

7 What are accounting concepts and conventions? Name them and explain any two accounting concepts. 14 Marks

(OR)

8 Journalise the following transactions. 14 Marks

Date	Particulars	Rs.
2012 Jan 1	Gopal Started business	10,000
Jan 3	Sale of goods for cash	150
Jan 5	Purchase of goods for cash	200
Jan 6	Sale of goods to Charan	400
Jan 7	Purchase of goods from Tagore for cash	300
Jan 8	Sale of goods to Eswar for cash	250
Jan 9	Purchases	150
Jan 10	Sales	100
Jan 12	Purchase of office furniture	200
Jan 17	Office Rent paid	50
Jan 18	Commission Received from Girish	20
Jan 19	Amount received from Charan's account	300
Jan 29	Sale of old machinery for cash	300
Jan 31	Paid Salaries	600

UNIT-V

9 The following is the Trial balance as on 31st December 2016 extracted from the books of Mr. Mastan & Co. 14 Marks

Particulars	Debit (Rs.)	Credit (Rs.)
Freehold Land	35,000	
Mortgage Loan		20,000
Plant and Machinery	45,500	
Loose tools 1.1.15	5,600	
Bills payable		3,400
Book debts	18,200	
Sales		1,21,500
Cash at bank	11,000	
Stock 1.1.16	10,500	
Insurance	300	
Bad debts	560	
Sundry creditors		15,600
Bills Receivable	5,400	
Purchases	50,000	
Cash on hand	640	
Rent, Rates, etc.	1,300	
Interest	250	
Wages	10,700	
Trade expenses	150	
Salary	1,560	
Repairs to plant	875	
Carriage Inwards	350	
Discount	290	175
Satish's capital		40,000
Drawings	2,500	
	2,00,675	2,00,675

Prepare trading and profit and loss account and balance sheet after making the following adjustment:

i) Interest on capital at 5%.
ii) Unexpired insurance premium Rs.90.
iii) Rent outstanding on 31-12-16 Rs. 300.
iv) Closing stock Rs.30,000.

(OR)

10 Distinguish between Manual Accounting and Computerised Accounting. 14 Marks

CODE No.:14BT5HS02 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

MANAGEMENT SCIENCE

[Electrical and Electronics Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Discuss the contributions of Henry Fayol to management thought. 14 Marks

(OR)

2 Discuss the methods of communication in modern organization and what could be the different barriers of organization. 14 Marks

UNIT-II

3 a) What is inventory? Explain the functions of inventory. 7 Marks

b) Discuss ABC Analysis of Inventory Classification. 7 Marks

(OR)

4 What are the limitations of $\overline{X}$ and R-Chart? The following inspection data refers to 10 samples of 100 items each concerning the production of bottle corks. Construct p-chart and write inferences from the chart. 14 Marks

Sample Number	1	2	3	4	5	6	7	8	9	10
Number of defectives	5	3	3	6	5	6	8	10	10	4

UNIT-III

5 Discuss the present state of personnel function in organizational context with special reference to the strategy, structure and systems of HR. 14 Marks

(OR)

6 Compare the assumptions of Mc. Gregor's theory X and theory Y about employees. 14 Marks

UNIT-IV

7 Crash the following project network, if overhead charges are Rs.100/day. 14 Marks

Activity	Normal Time	Normal Cost	Crash Time	Crash Cost
1-2	3	350	2	400
2-3	6	1440	4	1620
2-4	9	2160	8	2220
2-5	7	1300	5	1600
3-5	8	500	7	600
4-5	5	1600	3	1770
5-6	8	450	7	750

(OR)

8 Discuss concept of entrepreneur and List characteristics and traits of entrepreneur. 14 Marks

UNIT-V

9 a) How does a Just-In-Time is different from Total Quality Management? 7 Marks

b) Discuss briefly understanding of a supply chain management. 7 Marks

(OR)

10 Explain Enterprise Resource Planning (ERP). What are the objectives of ERP? How does it integrated the verticals of an industry? 14 Marks

CODE No.:14BT6HS01 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

BANKING AND INSURANCE

[Mechanical Engineering, Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Distinguish between Commercial Banks and Central Banks.	14 Marks
		(OR)	
2		Write a detailed on monetary policy of the banking sector.	14 Marks

UNIT-II

3		Explain the role of a banker income account of lunatics and insolvents.	14 Marks
		(OR)	
4		What do you know about Anti money laundering?	14 Marks

UNIT-III

5	a)	Describe the relationship between e-cash and RTGS.	7 Marks
	b)	Mention the differences between NEFT and RTGS.	7 Marks
		(OR)	
6		What is your opinion on demonetization decision by the present government of India? Discuss.	14 Marks

UNIT-IV

7		Write about the importance and elements of insurance.	14 Marks
		(OR)	
8		Explain the concepts of risk. Describe risk *Vs* uncertainty.	14 Marks

UNIT-V

9		Explain about the concepts of LIC and GIC.	14 Marks
		(OR)	
10		Describe the role and impact of IRDA in the insurance industry.	14 Marks

CODE No.:14BT6HS03 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

ENTERPRENEURSHIP FOR MICRO SMALL AND MEDIUM ENTERPRISES

[Mechanical Engineering, Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	Describe the skills required for Entrepreneurship.	14 Marks
	(OR)	
2	Explain the functions of an Entrepreneur.	14 Marks

UNIT-II

3	"Project formulation involves objective evaluation of various elements" highlight these elements and suggest its significance in Entrepreneurship.	14 Marks
	(OR)	
4	What is a project report? What are the various purposes served by a systematic project report?	14 Marks

UNIT-III

5	Explain the essential features of micro, small and medium enterprises.	14 Marks
	(OR)	
6	What is the role of micro enterprises in the economic development of India?	14 Marks

UNIT-IV

7	Explain : i) Industrial Development Bank of India (IDBI) ii) Small Industrial Development Bank of India (SIDBI)	14 Marks
	(OR)	
8	What is the role played by State Financial Corporations (SFCs) in Entrepreneurship development?	14 Marks

UNIT-V

9	What are the problems and prospects of women Entrepreneurship in India?	14 Marks
	(OR)	
10	Examine the role of NGOs in promoting rural Entrepreneurship.	14 Marks

CODE No.:14BT40501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

COMPUTER ORGANIZATION

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain how the floating-point numbers are represented and used in digital arithmetic operations. Give examples.	8 Marks
	b)	Draw and explain the hardware for signed magnitude addition and subtraction.	6 Marks
		(OR)	
2	a)	Draw and explain the bus system for four registers.	7 Marks
	b)	Give a brief note on logic micro operations and shift micro operations.	7 Marks

UNIT-II

3	a)	With the help of suitable examples explain conditional and unconditional transfer of instructions.	8 Marks
	b)	A digital computer has memory unit with a capacity of 16384 words 40 bits per word. The instruction code format consists of 6 bits for the operation part and 14 bits for the address part. Two instructions are packed in one memory word and a 40 bit Instruction Register is available in the control unit. Formulate a procedure for fetching and executing instructions for this computer.	6 Marks
		(OR)	
4		Draw the block diagram of micro program sequencer for a control memory and explain its operations.	14 Marks

UNIT-III

5	a)	Draw the block diagram of interface between a processor and peripheral devices and also explain its operations.	7 Marks
	b)	Compare interrupt driven data transfer scheme with DMA. Using block diagram explain interrupt driven transfer scheme.	7 Marks
		(OR)	
6	a)	What is asynchronous data transfer? Give at least six status conditions for setting of individual bits in the status register of an asynchronous communication interface.	10 Marks
	b)	Explain Daisy-chaining method of establishing priority.	4 Marks

UNIT-IV

7	a)	Define basic terms hit, miss and miss penalty and explain how to compute performance of cache memory.	7 Marks
	b)	List different types of main memories and compare them.	7 Marks
		(OR)	
8	a)	Discuss in detail about secondary storage optical disks.	7 Marks
	b)	Assume that a computer system employs a cache with an access time of 20ns and a main memory with a cycle time of 200ns. Suppose that the hit ratio for reads is 90%, what would be the average access time for reads if the cache is a "look-through" cache?	7 Marks

UNIT-V

9	a)	Distinguish between Arithmetic pipeline and Instruction pipeline.	7 Marks
	b)	Discuss Flynn classification for Multiple Processor Organizations	7 Marks
		(OR)	
10	a)	Explain in detail about Inter Process Synchronization with an example.	7 Marks
	b)	An unpipelined processor has a cycle time of 25ns. What is the cycle time of a pipelined version of the processor with five evenly divided pipeline stages, if each pipeline latch has a latency of 1ns?	7 Marks

CODE No.:14BT40503 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

DESIGN AND ANALYSIS OF ALGORITHMS

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define an algorithm. Write an algorithm to find the transpose of a matrix and find its complexity.	7 Marks
	b)	Explain about asymptotic notation with an example.	7 Marks
		(OR)	
2		Write an algorithm for Find and Union procedures for Sets and explain with examples.	14 Marks

UNIT-II

3	a)	Write an algorithm for Depth First Search Traversal for the graph.	7 Marks
	b)	What is biconnected graph? Explain about connected components and Spanning Trees.	7 Marks
		(OR)	
4		Write an algorithm for Quick Sort method using Divide and Conquer approach and derive the time complexity for the best, average and worst case.	14 Marks

UNIT-III

5	a)	What is dynamic programming? Explain about the Principle of Optimality.	7 Marks
	b)	Compare and contrast the difference between Greedy and Dynamic Programming methods.	7 Marks
		(OR)	
6		What is an optimal binary search tree? Write an algorithm to construct an optimal binary search tree using Dynamic Programming.	14 Marks

UNIT-IV

7		Explain in detail how the traveling salesperson's problem can be solved using LC Search Branch and Bound Technique.	14 Marks
		(OR)	
8	a)	Write recursive Backtracking algorithm.	7 Marks
	b)	Explain about Explicit and Implicit conditions in Backtracking with an example.	7 Marks

UNIT-V

9	a)	Write in detail about non-detereministic problems and the corresponding solutions.	7 Marks
	b)	Differentiate between NP-Hard and NP-Complete in detail.	7 Marks
		(OR)	
10		State and explain about Cook's Theorem in detail.	14 Marks

CODE No.:14BT41201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

OBJECT ORIENTED PROGRAMMING

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain garbage collection in java.	7 Marks
	b)	Write a java program to find the reverse of a given number.	7 Marks
		(OR)	
2	a)	Explain String Handling functions in java.	7 Marks
	b)	Explain this keyword in java.	7 Marks

UNIT-II

3	a)	Explain final keyword in java with examples.	7 Marks
	b)	Define interface and explain how to implement it with an example.	7 Marks
		(OR)	
4	a)	Explain Single Inheritance with an example.	7 Marks
	b)	Explain method overriding in java with an example program.	7 Marks

UNIT-III

5	Develop a simple real-life application program to illustrate the use of multithreads.	14 Marks
	(OR)	
6	Discuss the most common run-time errors in java and illustrate how a run-time error causes termination of execution of the program.	14 Marks

UNIT-IV

7	Develop an applet that receives three numeric values as input from the user and then displays the largest of the three on the screen. Write a HTML page and test the applet.	14 Marks
	(OR)	
8	Write an applet that shows two squares. The user should be able to drag either square with the mouse. (You'll need an instance variable to remember which square the user is dragging). The user can drag the square off the applet if she wants; if she does this, it's gone. You can try it here.	14 Marks

UNIT-V

9	Write a program to connect to a database and display all the data available in the database.	14 Marks
	(OR)	
10	Explain the life cycle of a servlet with a neat sketch.	14 Marks

CODE No.:14BT51201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

COMPUTER NETWORKS

[Computer Science and Engineering, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Illustrate with a neat sketch, the architecture of the UMTS 3G mobile phone network.	7 Marks
	b)	Compare and contrast OSI and TCP/IP reference models.	7 Marks
		(OR)	
2	a)	Draw the electromagnetic spectrum and mention its uses for communication.	7 Marks
	b)	Discuss the relationship of services to protocols.	7 Marks

UNIT-II

3	a)	Calculate the remainder obtained by dividing x^7+x^5+1 by the generator polynomial x^3+1.	7 Marks
	b)	Compare the performance of Pure and Slotted ALOHA at medium and high load.	7 Marks
		(OR)	
4	a)	A 12-bit Hamming code whose hexadecimal value is 0xE4F arrives at a receiver. What was the original value in hexadecimal? Assume that not more than 1- bit is in error.	7 Marks
	b)	Analyse the performance of sliding window protocols using go-back-n and selective repeat with the help of an example.	7 Marks

UNIT-III

5		With the help of a neat sketch, explain hierarchical routing.	14 Marks
		(OR)	
6		What is Congestion? Explain any one algorithm used to control congestion.	14 Marks

UNIT-IV

7		What is Connection establishment? How Transport layer establish a connection with Three-way Hand Shake mechanism? Explain in detail.	14 Marks
		(OR)	
8	a)	Explain each field in UDP Header Format with a neat diagram.	7 Marks
	b)	Write short note on Real time Transport Protocol.	7 Marks

UNIT-V

9		Illustrate with a neat sketch, explain the architecture and services of electronic mail.	14 Marks
		(OR)	
10		Explain MIME message format and compare it with RFC5322.	14 Marks

CODE No.:14BT51201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

COMPUTER NETWORKS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Draw with a neat sketch of TCP/IP reference model and explain.	7 Marks
	b)	Compare and contrast OSI and TCP/IP reference models.	7 Marks
		(OR)	
2	a)	Differentiate Coaxial cables and Twisted Pair cables.	7 Marks
	b)	Write short notes on 3G Mobile Phone Networks.	7 Marks

UNIT-II

3	a)	What are the design issues of Data Link Layer? Explain.	6 Marks
	b)	Define Error Detection. Generate codeword at sender site for a given data unit 100100; the divisor is 1101. Verify the codeword at receiver site.	8 Marks
		(OR)	
4	a)	Compare and contrast static and dynamic channel allocation problems.	7 Marks
	b)	Explain the channel allocation process with CSMA/CD protocol.	7 Marks

UNIT-III

5	a)	Explain Dijkstra Shortest path routing algorithm with an example.	7 Marks
	b)	Differentiate Unicast and Multi-cast routing techniques.	7 Marks
		(OR)	
6	a)	Write short note on Tunneling.	6 Marks
	b)	Draw a neat sketch of IPv6 Address format and explain each field in it.	8 Marks

UNIT-IV

7		Explain three way handshake protocol with a neat sketch.	14 Marks
		(OR)	
8	a)	What are the design issues of Transport Layer?	7 Marks
	b)	How is flow control done in Transport Layer?	7 Marks

UNIT-V

9		Explain Hyper Text Transfer Protocol.	14 Marks
		(OR)	
10		Write a short notes on: i) MIME. ii) TELNET.	14 Marks

CODE No.:14BT60101 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

REINFORCED CEMENT CONCRETE STRUCTURES – II

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Design a dog legged stair for a building in which the vertical distance between floors is 3.6 m. The stair hall measures 2.5m X 5m. The live load may be taken as 2500N/m². Use M20 concrete and Fe 415 grade steel reinforcement. 14 Marks

(OR)

2 Design a staircase consisting of 10 steps having 300mm tread and 160mm rise and two landings. The width of the staircase is 1500mm and the length of each landing is 1200mm. Assume the imposed load as 5kN/m² and mild exposure and use M20 concrete and Fe 415 steel. 14 Marks

UNIT-II

3 Design a combined rectangular footing for two columns C_1 and C_2 spaced at 3m apart. Characteristic loads on C_1 and C_2 are 750kN and 1000kN respectively and the size of the columns is 300mm X 600mm where 600mm size is along C_1-C_2. Width of the footing shall be 2m. The A.B.P on soil is 150kN/m². 14 Marks

(OR)

4 Design a pile under a column transmitting an axil load of 500kN. The pile is to be driven to a hard stratum available at a depth of 8m. Use M20 concrete and Fe 415 steel. 14 Marks

UNIT-III

5 Design a T-shaped retaining wall for a height of 5.50 m above the ground level. It retains earth which weighs 16 kN/m³ and has an angle of repose of 30°. Maximum pressure on the ground is limited to 120 kN/m². Use M20 concrete and Fe 415 grade steel. 14 Marks

(OR)

6 Design the stem of cantilever retaining wall to retain earth 4.5 m above ground level. The surcharge on the earth fill is 15 kN/m². The Angle of repose of soil is 30°. Unit weight of soil is 16 kN/m³. Coefficient of friction between soil and concrete is 0.6 and the safe bearing capacity of soil is 150 kN/m². Use M20 concrete and Fe 500 steel. 14 Marks

UNIT-IV

7 Design a circular water tank to hold 5,00,000 liters of water. Assume rigid joints between the wall and base slab. Adopt M20 concrete and Fe 415 steel. Sketch details of reinforcements. 14 Marks

(OR)

8 Design a spherical dome over a circular beam for the following data: 14 Marks

i) Inside diameter of the room = 15m.
ii) Rise of the dome = 5m.
iii) Live load due to wind, snow, etc = 1.5 kN/m.

UNIT-V

9 A concrete chimney of height 80m with external diameter of the shaft being 4m at top and 5m at bottom is required in a place where the wind intensity is 1.5kN/m^2. Thickness of brick lining is 10cm. Temperature difference between inside and outside of the shaft is 75°C. Permissible bearing pressure on the soil is 150kN/m^2. Adopt M25 grade concrete and for steel Fe 415 and design the Base section of the chimney. Air gap = 100mm, Coefficient of thermal expansion = 11 x 10^{-6}/°C. 14 Marks

(OR)

10 Design a silo for storing maize, having unit weight of 6870N/m^3. The silo has 6m internal diameter and the height of the cylindrical portion is 15m. The conical dome has a slope of 40^0 with horizontal and has an opening of 60cm diameter. Use Janssen's theory for $\mu = 0.521$ and $\mu' = 0.432$. Use M20 grade of concrete. 14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

FOUNDATION ENGINEERING

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Explain the different methods of soil exploration. 6 Marks

b) How the Standard Penetration Test is conducted in the field and what are the corrections applied to it. 8 Marks

(OR)

2 a) State the objectives of soil exploration and explain the wash boring method of soil exploration along with its merits and demerits. 8 Marks

b) Enumerate the different types of soil samples. 6 Marks

UNIT-II

3 a) Outline the various checks for the overall stability of gravity retaining wall. 8 Marks

b) A retaining wall 10m high with a vertical back supports saturated clay with horizontal surface. The properties of backfill are: $c = 35kN/m^2$, $\varphi = 0^o$, $\gamma = 20kN/m^3$. Determine the total active earth pressure. 6 Marks

(OR)

4 a) Derive an expression for the active earth pressure of cohesionless soil based on Rankine's theory. 5 Marks

b) A retaining wall with a smooth vertical back is 10 m high and retains a two layer sandy backfill. The top layer is 4m thick with $\varphi = 32^o$, $\gamma = 20kN/m^3$. The bottom layer is 6 m thick with $\varphi = 35^o$, $\gamma = 22kN/m^3$. Determine the total active earth pressure on the wall. 9 Marks

UNIT-III

5 a) Explain briefly the standard method of slices to compute the stability of slope. 6 Marks

b) Calculate the factor of safety with respect to cohesion of a clay slope laid at 1 in 2 to a height of 10m, if $\varphi = 12^0$, $c = 35kN/m^2$ and $\gamma = 19kN/m^3$. What is the critical height of the slope in this soil? Assume Taylor's stability number as 0.064. 8 Marks

(OR)

6 a) Compute the factor of safety of an infinite slope in a cohesionless soil for a steady state seepage condition, when the flow is parallel to the slope. 6 Marks

b) What inclination is required where a filling 12m high is to be constructed having a factor of safety of 1.25? The Soil has $C = 20kN/m^2$, $\phi = 15^0$, $\gamma = 17.0kN/m^3$. The stability number for $\phi_{cu} = 12^0$ is equal to 0.063. When the slope is 30^0 and 0.098 when the slope is 45^0. 8 Marks

UNIT-IV

7 A square footing 1.8m x 1.8m is placed over loose sand of bulk density $16kN/m^3$, saturated density $18kN/m^3$ and at a depth of 1.0m. The angle of shearing resistance is 30^0. Determine the ultimate bearing capacity when there is no effect of water table and when it is submerged (for $\varphi = 30^0$, the N_c=30.14, N_q=18.4and N_γ=15.1). 14 Marks

(OR)

8 a) What is the significance of permissible settlement? State the permissible settlements for Isolated and raft foundations in clays and Sandy Soils. 6 Marks

b) Determine the allowable bearing capacity of a 1.5m x 1.5m square footing placed at a depth of 2.0m in a sandy deposit having a unit weight of 19kN/m^3 with observed SPT value of 37. Water table is at depth of 1.5m. Determine the allowable bearing capacity for 50mm permissible settlement after applying suitable corrections for SPT value. 8 Marks

UNIT-V

9 a) How are skin friction and point resistance of a pile computed? 9 Marks

b) A concrete pile of 50cm diameter was driven into sand of loose to medium density to a depth of 15m. The following properties are known: Average unit weight of soil along the length of the pile, γ = 17.5kN/m^3, average φ = 30°, average K_s = 1.0 and δ= 0.750. Calculate (i) the ultimate bearing capacity of the pile, and (ii) the allowable load with *Fs*=2.5. Assume the water table is at great depth. Use Berezantsev's method. N_q for L/d = 33.3 $\varphi = 30^0$ is equal to 16.5. 5 Marks

(OR)

10 a) What are the advantages and disadvantages of a Pneumatic Caisson when compared with other types? 7 Marks

b) Design a Cylindrical Open Caisson to be sunk through 30m of sand to support a load of 50MN. The allowable bearing pressure is 1700kN/m^2. Test the feasibility of sinking the caisson, taking the skin friction as 27kN/m^2. What is the thickness of the concrete seal required? 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

TRANSPORTATION ENGINEERING - I

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) What are the factors affecting highway alignment and explain the different surveys that are to be conducted for highway projects? 7 Marks

b) Derive an expression for Stopping sight distance. Calculate the Stopping sight distance on a highway at a descending gradient of 2% for a design speed of 80kmph. Assume other data as per IRC recommendations. 7 Marks

(OR)

2 a) Derive an expression for transition curves. Design the length of transition curve for a national highway of radius 500m, Design speed V = 80kmph, Width of the pavement W = 7m and assume suitable data. 7 Marks

b) Derive an expression for Vertical summit curves. Derive the length of summit curve to provide a stopping sight distance for a design speed of 80kmph for an intersection formed of two gradients +3.0 and -5.0 percent. Assume other data. 7 Marks

UNIT-II

3 Discuss the construction of Road in water-Logged areas and explain the process of drainage of slopes and erosion control. 14 Marks

(OR)

4 The maximum quantity of water expected in one of the open longitudinal drains on clayey soil is 0.9m^3/sec. Design the cross section and longitudinal slope of trapezoidal drain assuming the bottom width of the trapezoidal section to be 1.0m and cross slope to be 1.0 vertical to 1.5 horizontal. The allowable velocity of flow in the drain is 1.2m/sec and Manning's roughness coefficient is 0.02. 14 Marks

UNIT-III

5 a) Draw a neat sketch of a Rigid pavement. Indicate all component layers. Explain the functions of each layer. 7 Marks

b) Calculate the maximum warping stresses at the edge and interior of a slab of length 4.5m long and 3.5m width. Take the elastic modulus of the concrete as $3x10^5$kg/cm^2. Modulus of sub grade reaction = 8.0kg/cm^3; thickness of pavement slab = 20cm; radius of contact area= 15cm; Poisson's ratio= 0.15; Temperature differential between top and bottom surface of the slab as 17^oC, coefficient of thermal expansion of concrete as 10 x 10^{-6} per^oC. 7 Marks

(OR)

6 a) Design the thickness of a flexible pavement for a dual single carriage way with the data using IRC method: Traffic Expected = 440 CV/day in both directions Design Life = 15 years; Design CBR value of soil sub Grade= 5% ; Vehicle Damage Factor = 3.1; Traffic Growth Rate = 7.3% 7 Marks

b) Design the length and spacing of tie bars given that the pavement thickness is 20cm and width of the road is 7m with one longitudinal joint. The unit weight of concrete is 2400kg/m^3, the coefficient of friction is 1.5, allowable working tensile stress in steel is1750kg/cm^2 and bond stress of deformed bars is 7 Marks

24.6kg/cm^2.

UNIT-IV

7	a)	With the help of neat sketches, explain the construction of expansion joint and contraction joint.	7 Marks
	b)	Write a brief note on bituminous pavement construction.	7 Marks

(OR)

8		Write in detail with the help of neat sketches: i) Trucks and Haulage equipment. ii) Scrappers.	14 Marks

UNIT-V

9	a)	Write the functions and requirements of sleepers and ballast in a railway track.	7 Marks
	b)	Draw a neat sketch of Right Hand Turnout.	7 Marks

(OR)

10	a)	What are various gradients used in Railway Track? Explain about the grade compensation.	7 Marks
	b)	What do you understand by wind rose diagram? Explain the types of wind rose diagram with the help of neat sketches.	7 Marks

CODE No.:14BT60104 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

WASTEWATER TECHNOLOGY

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the terms (i) Sullage and (ii) Garbage.	5 Marks
	b)	Describe water carriage system and conservancy system. What are the relative advantages and disadvantages of the two systems?	9 Marks
		(OR)	
2	a)	Differentiate between combined and separate systems of sewerage.	7 Marks
	b)	Explain about partially separate system of sewerage. State its merits and demerits.	7 Marks

UNIT-II

3	a)	Explain the terms (i) Average flow (ii) Dry weather flow (iii) Maximum flow of sewage.	7 Marks
	b)	What are the various types of sewer appurtenances? Explain manholes and drop manholes with neat sketches.	7 Marks
		(OR)	
4	a)	Explain "one pipe" and "two pipe" system of plumbing for buildings and state their merits and demerits.	7 Marks
	b)	What is BOD? Deduce an expression for the first stage BOD.	7 Marks

UNIT-III

5	a)	What are various process required to treat the various components of sewage? Give a neat sketch of a common type of sewage treatment plant.	8 Marks
	b)	What is the purpose of preliminary treatment of sewage? How are grit and screenings disposed off?	6 Marks
		(OR)	
6		Two long rectangular primary settling tanks are provided in a sewage treatment plant to handle an overflow of 6000 m^3/day. The raw sewage suspended solids concentration is 300 mg/l and the expected suspended solids removal in primary is 50%. If the tanks are 5m wide, 15m long and have a side water depth of 3m. Find out the surface over flow rate in $m^3/day/m^2$, detention time in hours, mass of sludge generated per day in kg/day if the moisture content of sludge is 97%.	14 Marks

UNIT-IV

7	a)	Explain the process of activated sludge process.	7 Marks
	b)	Design a conventional activated sludge plant to treat settled domestic sewage with diffused air aeration system, with the following data.	7 Marks

i) Population = 2,00,000
ii) Per capita flow = 150 lpcd
iii) Settled sewage BOD5 = 225 mg/l
iv) Average flow = 20 mLd
v) Effluent BOD5 required =10 mg/l.

(OR)

8	a)	Explain the construction and working of aerated lagoon.	7 Marks
	b)	Explain in brief the construction, location and working of an oxidation pond.	7 Marks

UNIT-V

9	Write a short note on self-purification of streams. Compare the stream water and sea water dilution. Enumerate the various conditions affect the self-purification of streams.	14 Marks

(OR)

10	Explain the construction and design parameters to be considered in the design of septic tank. Also explain how purification of sewage takes place in a septic tank?	14 Marks

CODE No.:14BT60107 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

GROUND WATER DEVELOPMENT AND MANAGEMENT

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Distinguish between zone of aeration and zone of saturation with a neat sketch.	7 Marks
	b)	Discuss critically vertical distribution of ground water.	7 Marks
		(OR)	
2	a)	Describe the basic concepts of different geologic structures that govern occurrence and movement of ground water.	7 Marks
	b)	Describe differential equation governing ground water flow.	7 Marks

UNIT-II

3	a)	Describe recuperation test and yield of an open well.	7 Marks
	b)	Explain steady and unsteady radial flow of ground water towards wells in both the aquifers.	7 Marks
		(OR)	
4	a)	List out the assumptions made in the Dupuit's equation. Derive an expression for the steady state discharge of a well fully penetrating into a confined aquifer.	7 Marks
	b)	Explain non-equilibrium equations along with their significance.	7 Marks

UNIT-III

5	a)	Describe practical methods to halt and abate sea water intrusion in coastal regions.	7 Marks
	b)	Explain : i) Occurrence of saline water intrusions. ii) Shape of interface.	7 Marks
		(OR)	
6		Describe in detail, the recognition of seawater in ground water.	14 Marks

UNIT-IV

7		What are the computations of artificial recharge? Write a detailed note on advantages of artificial recharge.	14 Marks
		(OR)	
8	a)	Explain the need and concept of artificial recharge.	7 Marks
	b)	Explain the applications of RS and GIS in artificial recharge along with case studies.	7 Marks

UNIT-V

9		What is the significance of Geophysical methods? Describe common electrode arrangements for resistivity determination with both (i) Wenner and (ii) Schlumberger arrangement. Also, interpret the two layer electrical resistivity measurement from Schlumberger electrode spacing with neat sketches.	14 Marks
		(OR)	
10		How do you employ seismic method of exploration? Explain how the thickness of the layers can be estimated based on reflection and refraction of shock waves.	14 Marks

CODE No.:14BT60108 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

SOLID WASTE MANAGEMENT

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Explain the quantity and composition of municipal solid wastes.	14 Marks
		(OR)	
2		What are the ways to create public awareness on solid waste management? Discuss in detail.	14 Marks

UNIT-II

3		Illustrate the process of on-site segregation of solid waste.	14 Marks
		(OR)	
4		Explain the type of storage method and the materials used for the storage container.	14 Marks

UNIT-III

5		Describe in detail the methods of collection system with flow diagram and types of prepared vehicles used.	14 Marks
		(OR)	
6	a)	What are transfer stations? What are the factors to be considered while selecting the site for a transfer station?	7 Marks
	b)	Explain the need for transfer operation.	7 Marks

UNIT-IV

7	a)	What are the materials can be recovered from solid waste. Briefly describe concepts of energy recovery from solid waste.	7 Marks
	b)	Explain the classifications of composting technologies.	7 Marks
		(OR)	
8		Write short notes on: i) Incineration. ii) Pyrolysis.	14 Marks

UNIT-V

9		With neat sketches, describe different types of land filling technique for solid waste disposal.	14 Marks
		(OR)	
10	a)	Write the adverse effects of a landfill leachate.	7 Marks
	b)	Discuss the various methods of leachate treatment.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

MICROPROCESSORS AND MICROCONTROLLERS

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Explain the concept of segmented memory. What are its advantages? 7 Marks

b) Explain the physical memory organisation in an 8086 system. 7 Marks

(OR)

2 a) What do you mean by addressing modes? What are the different addressing modes supported by 8086? Explain each of them with suitable examples. 7 Marks

b) Find out the largest number from an unordered array of sixteen 8-bit numbers stored sequentially in the number locations starting at offset 0500H in the segment 2000H. 7 Marks

UNIT-II

3 a) What are the contents of the data bus and the status of A0 and $\overline{BHE}$ when the following instructions are executed in 8086? 7 Marks

i) CPU writes a byte 11H at memory location 1000H : 0002H.

ii) CPU writes a word 2211H at memory location 1000H : 0003H.

b) Draw and explain the block diagram of 8259 priority interrupt controller. 7 Marks

(OR)

4 a) Write the functions of the following pins of 8086. 4 Marks

i) $MN/\overline{MX}$ ii) $\overline{DEN}$. iii) ALE. iv) Ready.

b) It is required to interface two chips of 32K X 8 ROM and four chips of 32K X 8 RAM with 8086 according to following map. 10 Marks

ROM1 and 2: F0000H – FFFFFH

RAM1 and 2: D0000H –DFFFFH

RAM3 and 4: E0000H – EFFFFH

UNIT-III

5 a) Explain the format of mode and command register formats of 8251. 10 Marks

b) Frame the control word of 8255 PPI for port A in mode 1 as input port, port B in mode l as output port and leave the pins of port C unused. 4 Marks

(OR)

6 a) Explain the architecture of 8255 with neat diagram and also give the format of BSR control word. 9 Marks

b) What is meant by serial communication and also explain the following MODEM control lines: 5 Marks

i) DSR. ii) DTR. iii) RTS. iv) CTS.

UNIT-IV

7 a) Write an assembly language program for 8051 microcontroller to generate Fibonacci series. 7 Marks

b) Read the following instructions and state whether each of the instruction is executable. If not, debug the instruction. 7 Marks

i) MOVA, @ r3. ii) ADD B, A.

iii) MUL A, R1. iv) MOVC A, @R1+dptr.

(OR)

8 a) Assume that 5 BCD data items are stored in RAM locations starting at 40H as shown below. Write a program to find the sum of all the numbers. The result must be in BCD. 7 Marks

40h = (71)
41h = (11)
42h = (65)
43h = (59)
44h = (37)

b) Show the design of an 8051 based system with 8k bytes of program ROM and 8k bytes of data ROM. 7 Marks

UNIT-V

9 a) Discuss the interrupt structure of 8051. Mention the priority. Explain how least priority is made as highest priority. 9 Marks

b) List out the steps involved in programming the 8051 to transfer data serially. 5 Marks

(OR)

10 Give the hardware and software details of 4x4 matrix keyboard interfaced to 8051. 14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

POWER ELECTRONICS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the operation of IGBT with the help of neat structural diagram and suitable wave forms.	7 Marks
	b)	What are dv/dt and di/dt ratings of SCRs? What happens if these ratings exceed? Explain.	7 Marks

(OR)

2	a)	Describe any one driver circuit and snubber circuit for MOSFET.	7 Marks
	b)	Draw the dynamic characteristics of SCR during turn-on and turn-off and explain.	7 Marks

UNIT-II

3	a)	Compare the performance of single phase fully controlled bridge converter feeding RL load without freewheeling diode and single phase semi converter.	7 Marks
	b)	State the advantages of using freewheeling diode in phase controlled converters.	7 Marks

(OR)

4		A three phase full converter bridge is connected to supply voltage of 230V per phase and a frequency of 50Hz. The source inductance is 4mH. The load current on dc side is constant at 20A. If the load consists of a dc voltage source of 400V having an internal resistance of 1Ω, calculate firing angle delay and overlap angle.	14 Marks

UNIT-III

5		What are dual converters? What are their applications? Explain the operation of a three phase dual converter.	14 Marks

(OR)

6		A single phase half wave ac voltage controller is connected with a load of R = 5Ω with an input voltage of 230V, 50 Hz. If the firing angle of thyristor is 45^o, determine (i) the RMS output voltage, (ii) power delivered to load (iii) input power factor and (iv) average value of input current and voltage.	14 Marks

UNIT-IV

7		Explain the working of type A chopper with suitable voltage and current waveforms. Give the complete time domain analysis of type A chopper.	14 Marks

(OR)

8	a)	Derive the expression for the output voltage of a step-up chopper and explain its control strategies.	7 Marks
	b)	A step-up chopper has input voltage of 220V and output voltage of 660V. If the Non-conducting time of thyristor chopper is 100 micro seconds, compute the pulse width of output voltage. In case pulse width is halved for constant frequency operation, find the new output voltage.	7 Marks

UNIT-V

9	Describe the working of a single phase full bridge inverter with relevant circuit and waveforms.	14 Marks

(OR)

10	Explain sinusoidal pulse modulation used for PWM inverters. Write the important features of the same.	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

SWITCHGEAR AND PROTECTION

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss the principle of symmetrical components. Derive the necessary equations to convert phase quantities into symmetrical components and vice versa.	7 Marks
	b)	One conductor of a 3-phase line feeding a balanced delta-load is open. Assuming that line **c** is open; if current in line 'a' is $10\angle 0^0$ A, determine the sequence components of the line currents.	7 Marks

(OR)

2	a)	Show that, if the neutral is solidly grounded, the LG fault current would be more than the three phase fault current in case of an unloaded alternator.	7 Marks
	b)	A 20MVA, 6.6KV star connected generator has positive, negative and zero sequence reactances of 30%, 25% and 7% respectively. A reactor with 5% reactance based on the rating of the generator is placed in the neutral to ground connection. A line-to-line fault occurs at the terminals of the generator when it is operating at rated voltage. Find the initial symmetrical line-to-ground r.m.s fault current. Find also the line-to-line voltage.	7 Marks

UNIT-II

3	a)	Derive an expression for torque produced by an induction relay.	7 Marks
	b)	How do different distance relays perform with respect to their behavior on load, effect of arc resistance on the reach and response to power swing?	7 Marks

(OR)

4	a)	Discuss how an amplitude converter can be converted into a phase comparator and vice-versa.	7 Marks
	b)	Discuss the realization of an inverse over current relay using a microprocessor.	7 Marks

UNIT-III

5	a)	What is restricted earth fault protection for alternators? Why is this form of protection used for alternators even though it does not provide protection for the complete winding?	7 Marks
	b)	An 11 kV, 100MVA generator is grounded through a resistance of 6Ω. The C.T.s have a ratio 1000/5. The relay is set to operate when there is an out of balance current of 1A. What percentage of the generator winding will be protected by the percentage differential scheme of protection?	7 Marks

(OR)

6	a)	Discuss the working principle of a Buchholz relay. For what type of faults it is employed? Explain.	7 Marks
	b)	Describe with a neat diagram, a circulating current protection scheme for a 3-phase, 1MVA, 11kV/400 volts delta-star transformer. If the current transformers have a nominal secondary current of 5A, calculate their ratios.	7 Marks

UNIT-IV

7	a)	Discuss the protection scheme employed for parallel and ring main feeders using over current relays.	7 Marks
	b)	The CT ratio for all the CTs in the bus-bar differential scheme has to be the same and is decided by the feeder carrying the maximum current. Explain.	7 Marks

(OR)

8	a)	Give reasons for occurrence of over voltages in power systems. Explain the necessity to protect the lines and other equipment against over voltages.	7 Marks
	b)	Compare the protection performance of expulsion type surge diverter with that of a non linear surge diverter.	7 Marks

UNIT-V

9	a)	Discuss briefly about various types of fuses and their application in protecting power systems.	7 Marks
	b)	Explain briefly about the arc initiation and extinction process in a circuit breaker.	7 Marks

(OR)

10	a)	Discuss the operating principle of SF_6 circuit breaker. What are its advantages over other types of circuit breakers? For what voltage range it is recommended?	7 Marks
	b)	A circuit breaker interrupts the magnetizing current of a 100MVA transformer at 220kV.The magnetizing current of the transformer is 5% of the full load current. Determine the maximum voltage which may appear across the gap of the breaker when the magnetizing current is interrupted at 53% of its peak value. The stray capacitance is 2500μF. The inductance is 30H.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

DISTRIBUTION OF ELECTRIC POWER

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Derive the relationship between load and loss factors. Hence deduce the conditions for very short lasting peak and steady load.	14 Marks
		(OR)	
2		Define and explain coincidence factor and the contribution factors. Deduce the cases where coincidence factor is equal to contribution factor and is equal to average contribution factor.	14 Marks

UNIT-II

3		Explain the power factors referred to receiving end voltage and respective load voltages.	14 Marks
		(OR)	
4	a)	What should be the minimum cross sectional area of each conductor in a 2-core cable 100m long to limit the total voltage drop to 4% of the declared voltage of 250V when the conductor carry 60A? The resistivity of the conductor is 2.845 μΩ-cm.	7 Marks
	b)	Explain about radial d.c. distributor fed at both the ends.	7 Marks

UNIT-III

5	a)	What are the factors considered when selecting a location for a substation?	7 Marks
	b)	Explain the procedure for optimal location of substation.	7 Marks
		(OR)	
6		Describe the classification of substations with necessary schematic diagrams.	14 Marks

UNIT-IV

7	a)	Explain briefly about the common type of faults that occur in the distribution system.	7 Marks
	b)	What are the main differences between the fuse and the circuit breaker in the protection of distribution system?	7 Marks
		(OR)	
8	a)	What are the objectives of distribution system protection?	6 Marks
	b)	Electrical energy is supplied to a consumer from a substation at a distance of 250m. If the power required by the consumer is three phase 100KW at 415V unity power factor and resistance of single conductor of the connecting cable is 0.1/1000/m. Calculate: i) the voltage at the bus bar of the substation ii) the power loss in the cable	8 Marks

UNIT-V

9 a) Explain different types of capacitors used in distribution network to improve power factor. 7 Marks

b) A 400V, 50Hz, 3-phase line delivers 207 KW at 0.8 power factor lag. It is desired to bring the line power factor to unity by installing shunt capacitors. Calculate the capacitance if they are; 7 Marks

i) star connected ii) delta connected.

(OR)

10 a) Explain the concept of most economical power factor for constant KW load and constant kVA loads. 7 Marks

b) Mention causes of low power factor. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

HIGH VOLTAGE ENGINEERING

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	How is the electrical stresses / electrical field intensity controlled?	7 Marks
	b)	List the insulating materials used in high voltage transformers.	7 Marks
		(OR)	
2	a)	What is the need for generating high voltages in laboratory?	7 Marks
	b)	Explain the concept of estimation and control of electric stresses.	7 Marks

UNIT-II

3	a)	What is Paschen's law? How do you account for the minimum voltage for breakdown under a given 'pxd' condition?	7 Marks
	b)	In an experiment in a certain gas it was found that the steady state current is 5.5×10^{-8}A at 8kV at a distance of 0.4cm between the plane electrodes. Keeping the field constant and reducing the distance to 0.1cm results in a current of 5.5×10^{-9}A. Calculate Townsend's primary ionization coefficient α.	7 Marks
		(OR)	
4	a)	Define Townsend's first and second ionization coefficients. How is the condition for breakdown obtained in a Townsend discharge?	7 Marks
	b)	Describe the various factors that influence breakdown in a gas.	7 Marks

UNIT-III

5	a)	Explain with diagrams, different types of rectifier circuits for producing high **dc** voltages.	7 Marks
	b)	A 12 stage impulse generator has 0.126μF condensers. The wave front and wave tail resistances connected are 800Ω and 5000Ω respectively. If the load condenser is 1000pF, find the front and tail times of the impulse wave produced.	7 Marks
		(OR)	
6		Why is a Cockcroft-Walton circuit preferred for voltage multiplier circuits? Explain its working with a schematic diagram.	14 Marks

UNIT-IV

7		Explain the necessity of earthing and shielding arrangements in impulse measurements in high voltage laboratories. Draw the block diagram of impulse voltage test system.	14 Marks
		(OR)	
8		A generating voltmeter has to be designed so that it can have a range from 20 to 200kV DC. If the indicating meter reads a minimum current of 2μA and maximum current of 25μA, what should the capacitance of the generating voltmeter be?	14 Marks

UNIT-V

9		Explain the different electrical tests done on cables and transformers.	14 Marks
		(OR)	
10		Explain the balanced and straight detection methods for locating the partial discharges in a solid insulating system.	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

COMPUTER AIDED ELECTRICAL MACHINE DESIGN

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Briefly explain the choice of the specific electrical and magnetic loadings in electrical machine design.	CO3	7 Marks
	b)	Calculate the specific electrical and magnetic loadings of 100hp, 400V, 3-phase, 50Hz, 8 pole star connected flame proof induction motor having stator core length of 0.8m, stator bore of 0.76m; turns per phase are 272. Assume full load efficiency as 0.926 and power factor as 0.85.	CO2	7 Marks
		(OR)		
2	a)	What are the thermal considerations in machine design? Explain in detail.	CO1	7 Marks
	b)	A 300kW, 500V, 550 r.p.m, 6 pole dc generator is built with an armature diameter of 0.87m and core length of 0.35m .The lap wound armature has 720 conductors. Calculate the specific electric and magnetic loadings.	CO2	7 Marks

UNIT-II

3	a)	Discuss the factors, which governs the choice of number of poles in a DC Machine.	CO2	7 Marks
	b)	A design is required for a 50kW, 600 r.p.m DC shunt generator, the full load terminal voltage is 220V. Assume average gap density is 0.83wb/m^2 and specific electrical loading is 30,000 ampere conductors/meter. Determine the number of poles, diameter and length of generator.	CO3	7 Marks
		(OR)		
4	a)	Draw the flow chart for computer aided optimal design of DC machine.	CO3	7 Marks
	b)	Briefly explain the selection of variables for optimal design of DC machine.	CO1	7 Marks

UNIT-III

5	a)	Describe the various methods of cooling of transformers.	CO1	7 Marks
	b)	Develop an algorithm for computer aided optimal design of a transformer.	CO3	7 Marks
		(OR)		
6		Determine the main dimensions of the core, number of turns and the cross section of the conductors for a 5kVA, 11000/400V, 50Hz, single phase core type distribution transformer. The net conductor area in the window is 0.6 times the net cross section of iron in the core. Assume a square cross-section for the core, a flux density 1wb/m^2 a current density 1.4A/mm^2 and a window space factor 0.2. The height of window is 3 times its width, the stacking factor is 0.9.	CO3	14 Marks

UNIT-IV

7	a)	Derive the output equation of an induction motor.	CO2	6 Marks
	b)	Determine the main dimensions of 25kW, 3-phase, 415V, 50Hz, 1480 r.p.m squirrel cage induction motor. Assume the following: Full load efficiency: 88%, Full load power factor : 0.92 lag, Winding factor: 0.955, Specific magnetic loading: 0.4wb/m^2. Specific electrical loading: 25000A/m and the Rotor peripheral speed: 20m/sec at synchronous speed.	CO3	8 Marks

(OR)

8	a)	Explain clearly the various steps involved in the design of wound rotor of a 3-phase induction motor.	CO1	6 Marks
	b)	A 15kW, 440V, 4 pole, 50Hz, 3-phase induction motor is built with a stator bore 0.25m and a core length of 0.16m. The specific electrical loading is 23000 ampere conductors per meter. Using data of this machine determine the core dimensions, number of stator slots and number of stator conductors for a 11kW, 460V, 6 pole, 50Hz motor. Assume a full load efficiency of 84% and power factor of 0.82 lag .The winding factor is 0.955.	CO3	8 Marks

UNIT-V

9	a)	Determine a suitable number of slots and conductors per slot for the stator winding of a 3-phase, 3300V, 50Hz, 300 r.p.m alternator. The diameter is 2.3m and the axial length of the core is 0.35 m. The maximum flux density in the air gap should be approximately 0.9wb/m^2. Assume sinusoidal flux distribution, use single layer winding and star connection of stator.	CO3	7 Marks
	b)	Develop an algorithm/flow chart for computer aided optimal design of a synchronous machine.	CO2	7 Marks

(OR)

10	a)	Explain the step by step procedure for design of turbo alternators.	CO1	7 Marks
	b)	Determine suitable stator dimensions for a 500kVA, 3300V, 50Hz, 3-phase alternator to run at 375r.p.m. Take mean gap density over the pole pitch as 0.55wb/m^2, the specific electric loading as 25000A/m .The peripheral speed should not exceed 35m/sec.	CO3	7 Marks

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III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

DESIGN OF MACHINE ELEMENTS-II

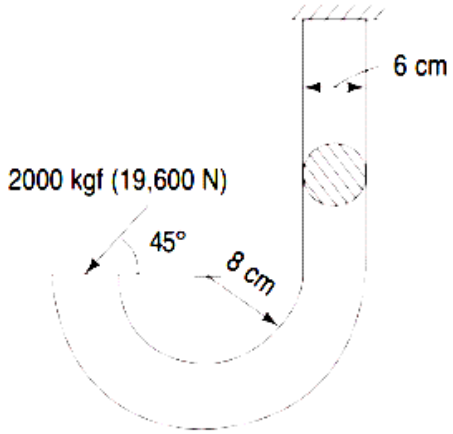
[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

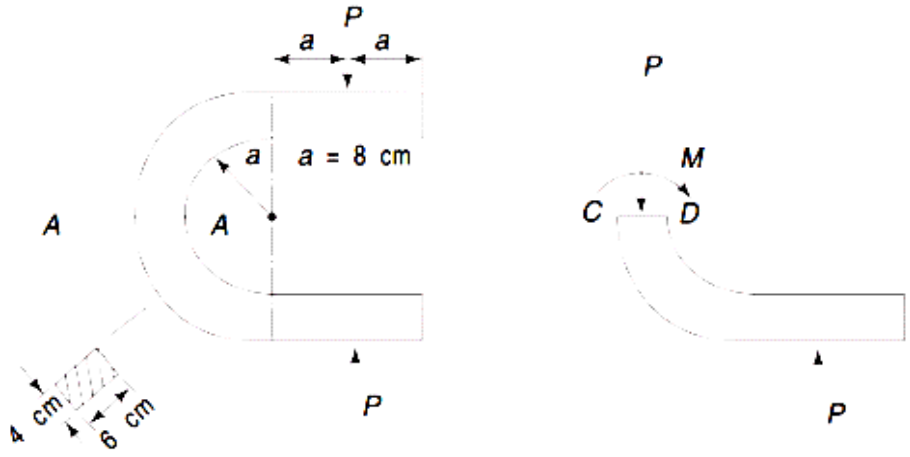
UNIT-I

1 Find the maximum tensile stress in the curved part of the hook shown in figure. 14 Marks



(OR)

2 Determine the maximum tensile and maximum compressive stresses across the Sec. AA of the member loaded, as shown in figure. Load P = 2000kgf(19620 N). 14 Marks



UNIT-II

3 a) Write the design procedure for journal bearing. 4 Marks

b) Design a journal bearing for a centrifugal pump from the following data: 10 Marks
Load on the journal = 20000N; Speed of the journal = 900 r.p.m.; Type of oil is SAE 10, for which the absolute viscosity at 55°C = 0.017 kg/m-s; Ambient temperature of oil = 15.5°C; Maximum bearing pressure for the pump = 1.5N/ mm². Calculate also mass of the lubricating oil required for artificial cooling, if rise of temperature of oil be limited to 10°C. Heat dissipation coefficient = 1232 W/m²/°C.

(OR)

4 A ball bearing subjected to a radial load of 4000N is expected to have a satisfactory life of 12000 hours at 720 r.p.m. with a reliability of 95%. Calculate the dynamic load carrying capacity of the bearing, so that it can be selected from manufacturer's catalogue based on 90% reliability. If there are four such bearings each with a reliability of 95% in a system, what is the reliability of the complete system? — 14 Marks

UNIT-III

5 a) Write down the advantages of involute gears. — 4 Marks

b) A reciprocating compressor is to be connected to an electric motor with the help of spur gears. The distance between the shafts is to be 500mm. The speed of the electric motor is 900 r.p.m. and the speed of the compressor shaft is desired to be 200 r.p.m. The torque, to be transmitted is 5000N-m. Taking starting torque as 25% more than the normal torque, determine: i) Module and face width of the gears using 20 degrees stub teeth, and ii) Number of teeth and pitch circle diameter of each gear. Assume suitable values of velocity factor and Lewis factor. — 10 Marks

(OR)

6 A pair of helical gears consist of a 20 teeth pinion meshing with a 100 teeth gear. The pinion rotates at 720 r.p.m. The normal pressure angle is 20° while the helix angle is 25°. The face width is 40mm and the normal module is 4mm. The pinion as well as gear are made of steel having ultimate strength of 600MPa and heat treated to a surface hardness of 300B.H.N. The service factor and factor of safety are 1.5 and 2 respectively. Assume that the velocity factor accounts for the dynamic load and calculate the power transmitting capacity of the gears. — 14 Marks

UNIT-IV

7 a) Explain equalizing of stresses in laminated springs. — 7 Marks

b) Explain design of concentric springs. — 7 Marks

(OR)

8 Design the helical spring with following data — 14 Marks

Load on spring	=	1000 N
Maximum shear stress	=	480 N/mm²
Spring index	=	6.0
Deflection	=	12 mm

UNIT-V

9 Design a connecting rod for a petrol engine from the following data: — 14 Marks

Diameter of piston 110mm,
Mass of reciprocating parts 2kg.
Length of connecting rod 325mm.
Stroke 150mm, Speed 1500 r.p.m.
Maximum explosion pressure = 2.5MPa.

(OR)

10 Explain design procedure of IC engine piston. — 14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

OPERATIONS RESEARCH

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Solve the following Linear Programming Problem (LPP). 14 Marks

$Max\ Z = 4x_1 + 6x_2 + 2x_3 \quad st$

$4x_1 - 4x_2 \le 5, -x_1 + 6x_2 \le 5, -x_1 + x_2 + x_3 \le 5$

$x_i \ge 0$

(OR)

2 Solve the following LPP by using dual simplex method. 14 Marks

$Min\ Z = x_1 + 2x_2 + 3x_3$

$st \quad x_1 - x_2 + x_3 \ge 4$

$x_1 + x_2 + 2x_3 \le 8$

$x_2 - x_3 \ge 2 \quad x_i \forall\, i \ge 0$

UNIT-II

3 a) Give the mathematical formulation of transportation problem. 7 Marks

b) Use Vogel's' approximate method to obtain an initial basic feasible solution of the transportation problem & find the optimal solution. 7 Marks

	W	X	Y	Z	Supply
A	11	13	17	14	250
B	16	18	14	10	300
C	21	24	13	10	400
Demand	200	225	275	250	

(OR)

4 a) For the assignment table, find the assignment of salesmen to districts that will result in maximum sales. 7 Marks

Districts / Sales people	A	B	C	D	E
1	32	38	40	28	40
2	40	24	28	21	36
3	41	27	33	30	37
4	22	38	41	36	36
5	29	33	40	35	39

b) State the travelling salesman problem. And how is it different from typical assignment problem. 7 Marks

UNIT-III

5 From the activity details given below, determine the optimal project duration by taking indirect cost as Rs.4.50/day. 14 Marks

Activity	Normal time(days)	Crash time(days)	Cost slope Rs/day
1-2	3	1	4
2-3	4	2	4
2-4	7	3	1
3-4	5	2	2

(OR)

6 The following table gives details about the various activities of a project 14 Marks

Activity	Times(days)		
	Optimistic time	Most likely time	Pessimistic time
1-2	10	11	12
2-3	6	10	14
2-4	5	8	11
2-5	1	5	9
3-6	3	7	5
4-6	4	9	14
5-7	1	2	3
6-7	3	7	11
7-8	9	12	15
7-9	3	5	7
8-9	0	0	0

i) Draw the network.
ii) Find the critical path and its expected project duration.
iii) The probability that the project will be completed within 50 days.

UNIT-IV

7 Customers arrive at one –window drive-in bank according to a Poisson distribution with mean of 10 per hour. Service time per customer is exponential with a mean of 5 minutes. The space in front of the window, including that for the serviced car, can accommodate a maximum of 3 cars. The other cars can wait outside this space. 14 Marks

i) What is the probability that an arriving customer can drive directly to the space in front of the window?
ii) What is the probability that an arriving customer will have to wait outside the indicated space?
iii) How long is an arriving customer expected to wait before starting service?

(OR)

8 A tourist car has 25 taxis in operation. He keeps 3 drivers as reserve to attend the calls in case the scheduled driver reports sick. The probability distribution of sick drivers is as follows: 14 Marks

Number of sick	0	1	2	3	4	5
Probability	0.1	0.15	0.10	0.15	0.22	0.28

Simulate for 10 days and estimate i) the utilization of reserve drivers.
ii) probability that at least one taxi will be off the road due to non-availability of a driver. Take random numbers as 82 89 78 24 53 61 18 45 04 23

UNIT-V

9 Solve the following game and give the optimal strategies of the players and the value of the game. 14 Marks

		Player B			
		I	II	III	IV
Player A	I	20	15	12	35
	II	25	14	8	10
	III	40	2	19	5
	IV	5	4	11	0

(OR)

10 A and B play game in which each has three coins 5p, 10p and 20p. Each selects a coin without the knowledge of the others choice. If the sum of the coins is an odd amount, A wins B's coin. If the sum is even, B wins A's coin. Construct the payoff matrix and find the best strategy for each player and the value of the game. 14 Marks

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HEAT TRANSFER

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Derive the general two-dimensional unsteady state heat conduction equation for an isotropic solid cylindrical rod with internal heat generation. Simplify the obtained equation to Poisson's equation, Fourier's equation and Laplace equation. 14 Marks

(OR)

2 Consider a large plane wall of thickness L = 0.05m. The wall surface at x = 0 is insulated, while the surface at x = L is maintained at a temperature of 30°C. The thermal conductivity of the wall is k = 30W/m°C, and heat is generated in the wall at a rate of $\dot{g}_{gen} = \dot{g}_0 e^{-0.5x/L}$ W/m³ where $\dot{g}_0 = 8 \times 10^6$ W/m³. Assuming steady one-dimensional heat transfer, (i) express the differential equation and the boundary conditions for heat conduction through the wall (ii) obtain a relation for the variation of temperature in the wall by solving the differential equation and (iii) determine the temperature of the insulated surface of the wall. 14 Marks

UNIT-II

3 Circumferential aluminium fins of rectangular profile (1.5cm. wide and 1mm thick) are fitted on to a 90mm engine cylinder with a pitch of 10mm. The height of the cylinder is 120mm. The cylinder base temperature before and after fitting the fins are 200^{0}C and 150^{0}C respectively. Take ambient at 30^{0}C and h (average) = 100W/m^{2}K. Estimate the heat dissipated from the finned and the unfinned surface areas of cylinder body. 14 Marks

(OR)

4 a) What is meant by a semi-infinite solid? Write temperature distribution equation for it. 6 Marks

b) A 60mm thick large steel plate (k = 42.6W/m^{0}C, α = 0.043m^2/h), initially at 440^{0}C is suddenly exposed on both sides to an environment with convective heat transfer coefficient 235W/m^2 ^{0}C and temperature 50^{0}C. Determine the centre line temperature, and temperature inside the plate 15mm from the mid plane after 4.3 minutes. 8 Marks

UNIT-III

5 Air at 20°C flows over a flat plate having a uniform heat flux of 800W/m^2. The flow velocity is 4m/s and the length of the plate is 1.2m. Determine the value of heat transfer coefficient and also the temperature of the plate as the air leaves the plate. 14 Marks

(OR)

6 a) Air at 4×10^{-4} kg/s and 27°C enters a triangular duct that is 20mm on a side and 2m long. The duct surface is maintained at 100°C. Assuming fully developed flow through the duct, determine air outlet temperature. 8 Marks

b) Explain with neat sketch how the flow and temperature development in the 6 Marks

entrance region of pipe differs among air, water and liquid metals.

UNIT-IV

7 a) State the different types of boiling and explain with neat sketch the different stages in pool boiling heat transfer. 8 Marks

b) An electric wire of 1.5mm diameter and 200mm long is laid horizontally and submerged in water at atmospheric pressure. The wire has an applied voltage of 16 V and carries a current of 40 amperes. Calculate: 6 Marks

(i) the heat flux. (ii) the excess temperature.

(OR)

8 Hot oil (C_p = 2200J/kg °C) is to be cooled by water (C_p = 4180J/kg°C) in a 2-shell-pass and 12-tube-pass heat exchanger. The tubes are thin-walled and are made of copper with a diameter of 1.8cm. The length of each tube pass in the heat exchanger is 3m, and the overall heat transfer coefficient is 340W/m² °C. Water flows through the tubes at a total rate of 0.1kg/s, and the oil through the shell at a rate of 0.2kg/s. The water and the oil enter at temperatures 18°C and 160°C, respectively. Determine the rate of heat transfer in the heat exchanger and the outlet temperatures of the water and the oil. 14 Marks

UNIT-V

9 a) Define emissivity, absorptivity and reflectivity. 6 Marks

b) Two large parallel plates are kept at 1000^0C and 500^0C. 8 Marks

i) Determine heat radiated.

ii) If the respective emissivities are 0.7 and 0.4, determine heat radiated.

(OR)

10 a) Distinguish between: 7 Marks

i) Black body and white body.

ii) Absorptivity and emissivity of a surface.

b) Radiant energy with an intensity of 800W/m² strikes a flat plate normally. The absorptivity is twice the transmissivity and thrice the reflectivity. Determine the rate of absorption, transmission and reflection of energy. 7 Marks

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III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

CAD/CAM

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Define CAD/CAM and discuss the implementation of CAD/CAM in a manufacturing scenario with a neat sketch.	14 Marks
		(OR)	
2		Mention the need for graphics standard and discuss about PHGIS and IGES data formats.	14 Marks

UNIT-II

3		Discuss about the working of a DDA algorithm with a neat sketch.	14 Marks
		(OR)	
4		A triangle ABC having vertices A (1, 1), B (1, 7) and C (5, 4) is scaled by 3 units in x-direction and then rotated by 30º in anticlockwise direction keeping point (1,1) fixed. Find the transformation.	14 Marks

UNIT-III

5		Define Numerical Control. Explain the Components of Numerical Control System.	14 Marks
		(OR)	
6		Briefly explain the two approaches in the Adaptive Control Machining System.	14 Marks

UNIT-IV

7		What are the types of process planning systems? Explain about each of them.	14 Marks
		(OR)	
8	a)	Explain the Optiz Coding System in group technology.	7 Marks
	b)	Briefly explain about Coding System Structure.	7 Marks

UNIT-V

9		Define CIM and discuss about the classification of various types of manufacturing systems	14 Marks
		(OR)	
10		Classify various types of inspection systems. With a neat sketch explain the working principle of a CMM.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

DIGITAL SIGNAL PROCESSING

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) 1. If a system is described by the following difference equation, 7 Marks

$y(n) = y^2(n-1) - nx(x) + 5x(n-1) - 2x(n-2);\ n \geq 0$

i) Is the system linear? Explain.
ii) Is the system shift invariant? Explain.
iii) Is the system causal? Explain why or why not.

b) Sketch the following signals. 7 Marks

(i) $u(t) = u(t-2)$. (ii) $\sin(wt)\, u(t-1)\, u(9-t)$.

(OR)

2 Find the impulse response and step response of the discrete time linear time invariant system whose difference equation is given by, 14 Marks

$y(n) = y(n-1) + 0.5y(n-2) + x(n) + x(n-1)$

UNIT-II

3 a) What is the advantage of Discrete Fourier Transform (DFT) over Discrete Time Fourier Transform (DTFT)? State and prove the following properties of DFT. 8 Marks

i) Time reversal. ii) Time convolution. iii) Circular time shifting.

b) Find circular convolution of the two finite duration sequences $x_1(n)=\{1,-1,-2,3,-1\}$ and $x_2(n)=\{1,2,3\}$. 6 Marks

(OR)

4 a) Compare computational complexity of direct evaluation of DFT and FFT algorithms. 4 Marks

b) Derive the necessary equations to compute 8-point DFT of a sequence using DIT-FFT algorithm and draw the signal flow graph. 10 Marks

UNIT-III

5 Design a digital Butterworth filter satisfying the constraints 14 Marks

$$0.707 \leq |H(e^{jw})| \leq 1, \ for\ 0 \leq w \leq \frac{\pi}{2}$$

$$|H(e^{jw})| \leq 0.2, \ for\ \frac{3\pi}{4} \leq w \leq \pi$$

With T = 1sec, using bilinear transformation. Realize the filter using the most convenient form.

(OR)

6 Design a Chebyshev lowpass filter with the specifications α_p=1dB ripple in pass band $0 \leq w \leq 0.2\pi$, α_s=15dB ripple in stopband $0.3\pi \leq w \leq \pi$ using impulse invariance method. Realize the filter in direct form–II. 14 Marks

UNIT-IV

7 a) What are the advantages of FIR filters over IIR filters? 5 Marks

b) Using rectangular window design a linear phase FIR filter of order N = 24 to approximate the following ideal frequency response magnitude 9 Marks

$$|H_d(e^{j\omega})| = 1 \qquad |\omega| \leq 0.2\pi$$
$$= 0 \qquad 0.2\pi \leq |\omega| \leq \pi$$

(OR)

8 Design highpass filter using Bartlett window with a cutoff frequency of 1.2 rad/sec and N = 9. Consider 14 Marks

$$H_d(e^{j\omega}) = e^{-j\alpha\omega} \qquad \omega_c \leq |\omega| \leq \pi$$
$$= 0 \qquad \text{otherwise}$$

Also find $H(e^{j\omega})$. Also realize designed filter.

UNIT-V

9 Discuss about the following with respect to programmable DSP's. 14 Marks

i) Short direct addressing mode.
ii) Circular addressing.
iii) TDM serial port.

(OR)

10 Discuss about following with respect to TMS320C6X DSP processor. 14 Marks

i) Functional Units.
ii) Control Register.

CODE No.:14BT60402 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

MICROWAVE ENGINEERING

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	How are waveguides different from normal two wire transmission lines? Discuss the similarities and dissimilarities. What is meant by the dominant mode of a waveguide? What is the dominant mode in rectangular wave guide?	7 Marks
	b)	Determine the group velocity and phase velocity for a dominant mode propagating through a waveguide of breadth 10cms at frequency 2.5GHz**.**	7 Marks
		(OR)	
2	a)	Discuss propagation of TE and TM modes in rectangular waveguides using necessary field expressions.	7 Marks
	b)	Derive the expressions for average power transmitted through rectangular wave guide for TEmn and TMmn modes.	7 Marks

UNIT-II

3	a)	Explain the following parameters used to characterize a directional coupler. i) Coupling coefficients. ii) Directivity. iii) Isolation.	7 Marks
	b)	With the help of a diagram, show how a Magic Tee can be used to behave as a mixer producing IF frequency.	7 Marks
		(OR)	
4	a)	Derive the scattering matrix of a E-plane Tee.	7 Marks
	b)	With a neat diagram, explain the dielectric and rotary wave phase shifters.	7 Marks

UNIT-III

5	a)	Derive the expression for power output and efficiency of a reflex klystron and explain bunching process.	7 Marks
	b)	Define velocity modulation and current modulation. Distinguish between velocity modulation and current modulation.	7 Marks
		(OR)	
6	a)	Explain the operation of a two cavity klystron amplifier with neat diagram.	7 Marks
	b)	Derive the expression of input power and output power of a catcher cavity in two cavity klystron amplifier.	7 Marks

UNIT-IV

7	a)	What are axial fields in a magnetron? Explain the production of sustained oscillations in it.	7 Marks
	b)	Derive the expression for cut-off magnetic field for a cylindrical magnetron.	7 Marks
		(OR)	
8	a)	Explain the construction and working of a cylindrical magnetron.	7 Marks
	b)	Define the Hull cut-off condition. Distinguish between TWT and Magnetron.	7 Marks

UNIT-V

9	a)	What are the different precautions have to be made while measuring parameters at Microwave range?	7 Marks
	b)	What is bolometer? How it is used for microwave measurements?	7 Marks

(OR)

10		Explain the constructional details of a Gunn diode. Explain different modes of operation of Gunn diode. Mention the typical (performance) characteristics of Gunn diode.	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

VLSI DESIGN

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Derive expressions for the drain to source current in the non-saturated and saturated regions of operation of an nMOS transistor.	10Marks
	b)	What are the different second order effects that exist in a MOS transistor?	4 Marks
		(OR)	
2	a)	Explain the DC characteristics of CMOS inverter with neat sketch.	8 Marks
	b)	Compare the characteristics of CMOS inverter with BiCMOS inverter.	6 Marks

UNIT-II

3	a)	Drive an expression for rise time, fall time of CMOS inverter.	6 Marks
	b)	Give the stick diagram of both nMOS and CMOS inverter.	8 Marks
		(OR)	
4	a)	Discuss the principle of constant field and lateral scaling. Write the effect of these scaling methods on the device characteristics.	8 Marks
	b)	Describe VLSI design flow.	6 Marks

UNIT-III

5	a)	Design 16-bit carry bypass adder and discuss its features.	10 Marks
	b)	Describe important features of various adders.	4 Marks
		(OR)	
6	a)	Design a 4x4 array multiplier and write down the equation for the delay.	8 Marks
	b)	With neat diagram and equation, explain the principles of comparator.	6 Marks

UNIT-IV

7	a)	Design an OR-AND PLA that provides the following outputs. F1 = M2. M3. M5 F2 = M0. M1. M4 F3 = M1. M2. M6. M7	8 Marks
	b)	With neat diagram explain the operation of synchronous counter.	6 Marks
		(OR)	
8	a)	With neat sketch, explain CLB, IOB and programmable interconnects of FPGA device.	8 Marks
	b)	Compare the features of PLA, PAL, CPLD and FPGAs.	6 Marks

UNIT-V

9	a)	Explain logic verification in detail.	7 Marks
	b)	What is logic synthesis? Show how VHDL support logic synthesis.	7 Marks
		(OR)	
10	a)	Explain the principles of manufacturing test.	4 Marks
	b)	Describe the adhoc testing and scan based testing approaches to enhance the	10 Marks

testability of VLSI circuits.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

IMAGE PROCESSING

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write notes on "Sampling and Quantization" in digital image processing.	7 Marks
	b)	Explain 8 connectivity and 4 connectivity in a digital image.	7 Marks
		(OR)	
2	a)	Define Haar transform. List any four properties of Haar transform.	7 Marks
	b)	What is Hotelling transform and list any four properties of the same?	7 Marks

UNIT-II

3	a)	Discuss in detail image smoothing using spatial filters in digital image processing.	7 Marks
	b)	Explain how sharpening of an image is achieved using spatial filters.	7 Marks
		(OR)	
4	a)	Explain the method of image smoothing in frequency domain.	7 Marks
	b)	With neat block diagram, explain the Homomorphic filtering.	7 Marks

UNIT-III

5	a)	Explain the concept behind weiner filter and discuss in detail how it is applied to digital images.	7 Marks
	b)	Explain how inverse filtering is used in image restoration.	7 Marks
		(OR)	
6	a)	Discuss the various noise models which are considered for image restoration.	7 Marks
	b)	Derive the degradation transfer function for constrained least squares filtering.	7 Marks

UNIT-IV

7		What is redundancy? Explain "run length coding" based compression technique using an example.	14 Marks
		(OR)	
8		Explain why image compression is needed. Discuss the various types of redundancies.	14 Marks

UNIT-V

9	a)	Explain how the Laplacian and Gaussian operators are used for image segmentation.	7 Marks
	b)	Write notes on RGB color model.	7 Marks
		(OR)	
10	a)	How is sharpening achieved in the color image processing?	7 Marks
	b)	Write notes on HSI color model.	7 Marks

CODE No.:14BT60431 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

PRINCIPLES OF COMMUNICATION

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the block diagram of a communication system.	7 Marks
	b)	Find the Fourier Transform of: i) $\mathbf{x(t) = \cos\omega_0 t}$ ii) $\mathbf{x(t) = \sin\omega_0 t}$.	7 Marks
		(OR)	
2	a)	Define the power spectral density and show that autocorrelation and power spectral density are Fourier Transform pair.	7 Marks
	b)	Explain various types of communication systems.	7 Marks

UNIT-II

3	a)	Explain how SSB-SC Signal is generated using phase shift method.	4 Marks
	b)	Derive the mathematical expression of Wide Band FM using Bessel functions.	6 Marks
	c)	An AM transmitter of 1KW power is fully modulated. Calculate the power transmitted if it is transmitted as SSB.	4 Marks
		(OR)	
4	a)	An angle modulated signal has the form $\mathbf{v(t)=100\cos(2\pi f_c t+4\sin 2000\pi t)}$ when f_c =10MHz ; i) Determine average power ii) Determine peak phase deviation iii) Determine peak frequency deviation iv) Is this an FM or PM signal? Explain.	6 Marks
	b)	Explain the concept of frequency translation using the spectrum of DSB-SC wave.	4 Marks
	c)	A diode envelope detector with a load resistance R = 250 KΩ in parallel with a capacitor C = 100 pF is used to detect an AM carrier with 60 % modulation. Find the highest modulation frequency that can be detected without distortion.	4 Marks

UNIT-III

5	a)	Explain the sampling theorem. Discuss about aliasing effect.	7 Marks
	b)	Explain the block diagram of TDM system.	7 Marks
		(OR)	
6	a)	Explain the generation of PWM.	7 Marks
	b)	Explain the demodulation of PAM.	7 Marks

UNIT-IV

7	a)	Derive the expression for signal to quantization noise ratio for PCM system that employs linear quantization technique. Assume the input to the PCM system is a sinusoidal signal.	7 Marks
	b)	Distinguish between QPSK and MSK.	7 Marks

(OR)

8	a)	Explain the delta modulation with block diagram? Discuss the disadvantages of delta modulation.	8 Marks
	b)	Discuss coherent, non coherent detection of ASK.	6 Marks

UNIT-V

9	a)	Consider five messages given by the probabilities 1/2, 1/4, 1/8, 1/16, 1/16. i) Calculate H ii) Use Shanon-Fano algorithm to develop an efficient code and, for that code, calculate the average Number of bits /message. Compare with H	9 Marks
	b)	What do you understand by error control coding? Explain the various methods briefly.	5 Marks

(OR)

10	a)	What are cyclic codes? Explain the algebraic structure of cyclic codes.	5 Marks
	b)	Design a linear block code with a minimum distance of 3 and a message block size of 8 bits and find first five code words.	9 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

OBJECT ORIENTED ANALYSIS AND DESIGN

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the various views considered in modeling a system's architecture.	7 Marks
	b)	Enumerate the steps to model single inheritance.	7 Marks
		(OR)	
2		List the UML diagrams which give a static view and dynamic view of a system. Explain.	14 Marks

UNIT-II

3	a)	Discuss briefly about classical analysis, domain analysis and behavioural analysis.	7 Marks
	b)	What do you mean by a class diagram? Explain how a class diagram represents logical design and structural design of a system.	7 Marks
		(OR)	
4	a)	Explain with an example the modeling techniques used for writing class diagrams.	7 Marks
	b)	Explain with an example how an object diagram is used to represent a scenario in the logical design of a system.	7 Marks

UNIT-III

5	a)	Briefly discuss about interaction diagrams with suitable examples.	7 Marks
	b)	Develop sequence diagram for deposit checking in the bank.	7 Marks
		(OR)	
6	a)	What do you mean by user-centred design? Discuss with an example about use case analysis of a software system.	7 Marks
	b)	Write about the requirement model. Clearly explain with a suitable example the steps for capturing requirement.	7 Marks

UNIT-IV

7		State the sketch of a state machine for the controller in a home security system, which is responsible for monitoring various sensors around the perimeter of the house. Briefly explain.	14 Marks
		(OR)	
8	a)	What is an event? Briefly explain how to model events in UML with an example.	8 Marks
	b)	Give the state machine diagram for Hotel Management system.	6 Marks

UNIT-V

9	a)	Define component. Explain about modeling file and documents.	7 Marks
	b)	Describe Forward and reverse engineering of Deployment diagram.	7 Marks
		(OR)	
10		Describe the steps to model the following. Illustrate with UML diagrams and explain.	14 Marks

i) Tables. ii) API. iii) Source code.

CODE No.:14BT61001 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

INDUSTRIAL INSTRUMENTATION-II

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Why is cold junction compensation necessary in temperature measuring schemes using thermocouples? What is the recent trend in making such compensation?	7 Marks
	b)	What are the possible sources of errors in filled-in system thermometers and how it is compensated?	7 Marks
		(OR)	
2	a)	How does a IC temperature sensor work? Draw a simple scheme and explain the thermometric operation	7 Marks
	b)	How temperature scale has been standardized? What are fixed points and how are they used in temperature standards?	7 Marks

UNIT-II

3	a)	Prove that the position of float gives direct indication of flow rate in rotameter.	7 Marks
	b)	List the various types of positive displacement flow meter. Explain about Nutating disc type flow meter.	7 Marks
		(OR)	
4	a)	Discuss about various tap positions used in head type flow meter installation.	7 Marks
	b)	Explain the principle of liquid bridge mass flow meter with necessary equations and diagram.	7 Marks

UNIT-III

5	a)	Explain how differential pressure manometer is used for the level measurement in pressure vessels.	7 Marks
	b)	Describe the principle of capacitive type level measurement sensors.	7 Marks
		(OR)	
6	a)	Discuss in detail the principle of float type of level gauges with relevant diagrams.	7 Marks
	b)	Explain how thermister can be used for level measurement and control.	7 Marks

UNIT-IV

7	a)	Describe how a Wheatstone bridge may be used to control various physical parameters.	7 Marks
	b)	Define the term 'null' as applied to bridge measurement, illustrate with example.	7 Marks
		(OR)	
8	a)	Explain the working of an auto zero amplifier.	7 Marks
	b)	Describe in brief the different methods used for measurement of medium resistances.	7 Marks

UNIT-V

9	a)	Classify proximity sensors and explain the operation of inductive type proximity sensor.	7 Marks
	b)	Briefly discuss about the role of circuit breakers in electrical safety.	7 Marks
		(OR)	
10	a)	Discuss the role of purging and pressurization in explosion protection methods.	7 Marks
	b)	Explain the construction and working of magnetic proximity sensor.	7 Marks

CODE No.:14BT61002 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

PROCESS CONTROL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Explain the characteristics and mathematical model of an Electrical system. 7 Marks

b) Discuss in detail about (i) Process variables (ii) Degree of freedom. 7 Marks

(OR)

2 a) With a neat block diagram, explain in detail about elements of process control loop. 7 Marks

b) Discuss in detail about characteristics of a liquid system. 7 Marks

UNIT-II

3 a) Explain in detail about composite control modes. 7 Marks

b) Discuss about two-position control with example. Why differential gap is used in the system? 7 Marks

(OR)

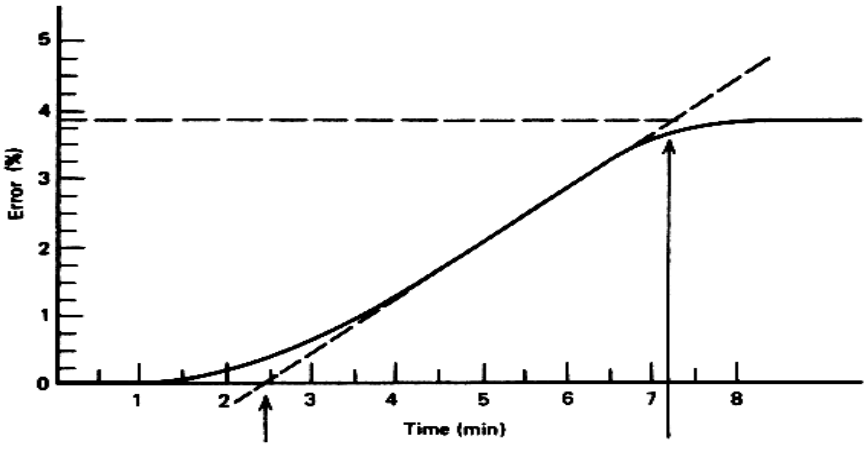
4 a) Explain the pneumatic force type PI controller with a neat sketch. 7 Marks

b) Explain the electronic type PID controller with a neat sketch. 7 Marks

UNIT-III

5 a) What is the use of evaluation Criteria? Explain IAE, ISE, ITAE criteria. 7 Marks

b) A transient disturbance test is run on a process loop. The results of a 9% controlling variable change give a process-reaction graph as shown in below figure. Find parameters for PID controller. 7 Marks



(OR)

6 a) Explain Ziegler Nichols method for tuning controller. 7 Marks

b) Show that the direct synthesis procedure for the following process, assuming a desired first-order response, yields a PID controller $g_p(s) = \frac{15}{s^2 + 4.9s + 0.9}$. Find the PID tuning parameters if a closed-loop time constant of 5 minutes is desired. 7 Marks

UNIT-IV

7	a)	Explain current to pressure converter with a neat diagram.	7 Marks
	b)	Discuss about any one type hydraulic actuator with neat diagram.	7 Marks
		(OR)	
8	a)	Explain about selection of control valve.	7 Marks
	b)	List different types of valves and elaborate on ball valves.	7 Marks

UNIT-V

9	a)	Explain feed forward control with an example of distillation column.	7 Marks
	b)	Explain Over-ride control scheme with an example.	7 Marks
		(OR)	
10	a)	Describe split range control. Under what circumstances is it recommended?	7 Marks
	b)	Explain the application of cascade control in distillation column.	7 Marks

CODE No.:14BT61201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

DATAWAREHOUSING AND DATA MINING

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is difference between operational databases system and data warehouses?	7 Marks
	b)	Explain cluster analysis.	7 Marks
		(OR)	
2	a)	Diagrammatically illustrate and discuss the data warehousing architecture with briefly explain components of data warehouse.	7 Marks
	b)	Explain the various OLAP operations.	7 Marks

UNIT-II

3	a)	What is noise? Describe the possible reasons for noisy data. Explain different techniques to remove the noise from data.	7 Marks
	b)	Explain Data Discretization and Concept Hierarchy Generation.	7 Marks
		(OR)	
4	a)	What is Redundancy and Correlation analysis with suitable example?	7 Marks
	b)	Write short notes on: i) Histograms. ii) Sampling. iii) clustering.	7 Marks

UNIT-III

5	a)	Explain Apriori algorithm with an example.	7 Marks
	b)	How can we mine multi-level association rules efficiently using concept hierarchies?	7 Marks
		(OR)	
6	a)	Can we design a method that mines the complete set of frequent item sets without candidate generation? If yes, explain with an example.	7 Marks
	b)	How would you show your understanding in Multidimensional data model?	7 Marks

UNIT-IV

7	a)	Discuss Naïve Bayesian classification.	7 Marks
	b)	Explain the Bayesian Belief Network.	7 Marks
		(OR)	
8	a)	Discuss sequential covering algorithm for rule induction.	7 Marks
	b)	What is associative classification?	7 Marks

UNIT-V

9	a)	Explain density based method with an example.	7 Marks
	b)	Explain K-means and K-medoids methods with an example.	7 Marks
		(OR)	
10	a)	Explain Outlier Analysis.	7 Marks
	b)	Explain about Hierarchical methods.	7 Marks

CODE No.:14BT61202 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

WEB PROGRAMMING

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write the syntax and example for i) <EMBED> ii) <ARTICLE> iii) <FORM>.	7 Marks
	b)	List and explain any four features of HTML5.	7 Marks
		(OR)	
2	a)	State and explain various elements and their attributes used while using links and URLs.	7 Marks
	b)	Explore in-detail about desktop notifications.	7 Marks

UNIT-II

3	a)	State and explore various CSS selectors.	7 Marks
	b)	What is the role of *JavaScript* in web designing? Explain its features.	7 Marks
		(OR)	
4	a)	What is a box model? Give an example for usage of margins of a web page.	5 Marks
	b)	Write a *JQuery* code to add content to the selected HTML element.	9 Marks

UNIT-III

5	a)	Describe various data types in PHP.	7 Marks
	b)	How to embedding PHP code in web pages? Explain.	7 Marks
		(OR)	
6	a)	List and explain various types of constants in PHP.	7 Marks
	b)	Explain in detail about various types of control structures in PHP.	7 Marks

UNIT-IV

7	a)	Demonstrate several challenges in while creating database driven web applications.	7 Marks
	b)	Explain the database transaction support using PHP.	7 Marks
		(OR)	
8	a)	Explain the creation of Cookies and Sessions in PHP.	7 Marks
	b)	Write about Prepared Statement in mySQL. Explain with suitable example.	7 Marks

UNIT-V

9	a)	Explore various features of XML. Describe the structure of an XML document.	5 Marks
	b)	Write a code that demonstrates validating a field using XMLHttpRequest object.	9 Marks
		(OR)	
10	a)	What is a DTD? Create an external DTD file that links the XML document contains the procedure for creating fruit delight drink.	9 Marks
	b)	What are the reasons to use AJAX? Explain the working model of AJAX.	5 Marks

CODE No.:14BT70109 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

RURAL TECHNOLOGY

[Mechanical Engineering, Computer Science and Engineering, Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the Ancient Indian technologies prevailing in rural India.	6 Marks
	b)	Write short notes on role of following in rural development. i) CAPART. ii) NIF.	8 Marks
		(OR)	
2	a)	Explain in detail the sources of non conventional energy.	6 Marks
	b)	Write short notes on role of following in rural development. i) Technologies for poverty eradication. ii) Rural Business Hubs.	8 Marks

UNIT-II

3	a)	Define the term Energy. Why solar energy has become more popular when you compared to other sources of energy.	8 Marks
	b)	What is meant by waste management and how it will be implemented in rural communities?	6 Marks
		(OR)	
4	a)	What is meant by 3R principle? How it will be implemented?	6 Marks
	b)	Explain in detail the production of biomass products and their utilization.	8 Marks

UNIT-III

5	a)	Discuss the development of tertiary sector.	7 Marks
	b)	Elaborate the role of cottage and social industries in rural development.	7 Marks
		(OR)	
6	a)	Write a short note on building and construction technologies adopted for developing the rural areas.	7 Marks
	b)	How does cultivation helps in rural development?	7 Marks

UNIT-IV

7	a)	What is Rain Water Harvesting (RWH)? Where RWH can be implemented?	6 Marks
	b)	Explain different water purification systems used in rural areas for supplying potable water to the community.	8 Marks
		(OR)	
8	a)	Write short notes on Bio-fertilizers and its impact on society.	7 Marks
	b)	What are the measures taken to protect environment and sanitation issues in rural areas?	7 Marks

UNIT-V

9		Information technology for the rural development is a boon or bane? Apply its principles for a specific purpose.	14 Marks
		(OR)	
10		What is meant by CSR? Being a stack holder what will be your responsibility to	14 Marks

develop the rural areas.

CODE No.:14BT70304 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

INDUSTRIAL AUTOMATION AND ROBOTICS

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain briefly about Flexible automation system.	7 Marks
	b)	Discuss about the objective and types of Flexible assembly lines system used in manufacturing Industry.	7 Marks
		(OR)	
2	a)	Discuss briefly about the ten strategy for automation and production system.	7 Marks
	b)	Explain about five levels of automation.	7 Marks

UNIT-II

3	a)	Explain the functional line diagram representation of robot arm.	7 Marks
	b)	Write a brief note on vacuum gripper.	7 Marks
		(OR)	
4		Classify robots according to the coordinates of motion. With a sketch and an example, explain the features of each type.	14 Marks

UNIT-III

5	a)	Discuss about the forward transformation of 3D of robot arm.	8 Marks
	b)	Prove that rotation about **x** axis followed by **y** axis will not be equal to rotation about **y** axis followed by **x** axis.	6 Marks
		(OR)	
6	a)	Explain with neat sketch about the working principles about Pneumatic non-servo robot manipulator control system.	7 Marks
	b)	Explain briefly about Denavit-Hartenberg notation of joint for common robot.	7 Marks

UNIT-IV

7	a)	What is the function of tactile array force sensor?	7 Marks
	b)	A robot is needed to pick up a glass containing liquid medium from a conveyor to a table. Explain the suitable type of sensor and gripper for this.	7 Marks
		(OR)	
8	a)	Explain briefly about Resolver and LVDT working principle.	8 Marks
	b)	Explain briefly about safety measures used in robot work volume.	6 Marks

UNIT-V

9	a)	Briefly explain different types of robot cell layout.	7 Marks
	b)	What are the safety monitoring devices used in robot.	7 Marks
		(OR)	
10	a)	What is the need for joint force sensing?	7 Marks
	b)	Discuss about AML and MCL robot languages.	7 Marks

CODE No.:14BT70501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

COMPILER DESIGN

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Find regular expressions for the following languages over the alphabet {0, 1}. 9 Marks
i) Strings containing exactly two 0's
ii) Strings that begin or end with 00 or 11
iii) Strings that contain even number of 0's

b) Differentiate between compiler and interpreter. 5 Marks

(OR)

2 a) Discuss in detail about construction of parsing tables. 6 Marks

b) Give the parse tree for the following while statement. 8 Marks
while A>B & A<=2*B-5 do A:=A+B.

UNIT-II

3 a) Find the First and Follow sets for the following grammar. 10 Marks
E → TA A → +TA / ε T → FB B → *FB / ε F → (E) / **id**

b) Distinguish between top down parsing and bottom up parsing. Give one example for each. 4 Marks

(OR)

4 a) Find the predictive parser for the following grammar and parse the sentence (a+b) *c 6 Marks

E→E+T|T
T→T*F|F
F →(E)| id

b) Prove that if a grammar is LL(1), then it is definitely LR(1). 8 Marks

UNIT-III

5 a) Explain syntax directed translation with an example. 7 Marks

b) With an example, explain the process of bottom up evaluation of S-attributed definitions. 7 Marks

(OR)

6 a) Define Syntax Directed Definition. Write the Syntax Directed Definition for a simple desktop calculator program (grammar). Draw the annotated parse tree for **3 + 4 *5**. 10 Marks

b) Give the translation scheme for checking the type of statements and explain. 4 Marks

UNIT-IV

7 a) Translate the assignment A: = (E/F) *(C-D) into the following: 7 Marks
i) Quadruples ii) Triples.

b) Translate the assignment x: = A[y, z] into three address statement. 7 Marks

(OR)

8 a) Explain how an activation record is related with runtime storage organization. 7 Marks

b) What is a display? How to use displays in runtime storage organization. 7 Marks

UNIT-V

9 a) What are the issues in code generation process? Explain in detail. 4 Marks

b) Construct the flow graph for the following code 10 Marks

```
a=0;
b=1;
while(a<b)
{
 if c<d then a=a+1;
    b++;
}
```

(OR)

10 a) Construct the DAG for the basic block with following code: 10 Marks

d := b*c; e := a+b; b := b*c; a := e-d

b) What happen if the code optimization phase is not present in compiler? Explain. 4 Marks

CODE No.:14BT71507 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations December - 2018

SOFTWARE PROJECT MANAGEMENT

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss software economics. Explain the evolution of it in detail.	6 Marks
	b)	Why should project manager bother about software product size? Explain the ways of reducing the software product size.	8 Marks
		(OR)	
2	a)	Explain the predominant process used for the software cost estimation.	8 Marks
	b)	Explain adversarial stakeholder relationship.	6 Marks

UNIT-II

3		Describe the two stages of the life cycle to active economies of scale and higher returns on investment.	14 Marks
		(OR)	
4	a)	Explain the principles of modern software management.	8 Marks
	b)	Explain the general quality improvements with a modern process.	6 Marks

UNIT-III

5	a)	Discuss about the requirement and design sets used in artifact.	7 Marks
	b)	Describe about the pragmatic artifacts.	7 Marks
		(OR)	
6	a)	Explain about the iteration workflow.	7 Marks
	b)	Describe the architecture for software project with respect to management perspective.	7 Marks

UNIT-IV

7		Explain the sequence of life cycle checkpoints.	14 Marks
		(OR)	
8	a)	Write short note on pragmatic planning.	7 Marks
	b)	Explain about the software assessment team in project organization.	7 Marks

UNIT-V

9	a)	Explain how budgeted cost and expenditure will help in project development.	7 Marks
	b)	What is role of scale factor in tailoring a software process framework?	7 Marks
		(OR)	
10	a)	Explain about the process maturity in software project.	7 Marks
	b)	Explain the role of cooperation of stakeholder will drive software process.	7 Marks

CODE No.:14BT5HS01 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

MANAGERIAL ECONOMICS AND PRINCIPLES OF ACCOUNTANCY

[Civil Engineering, Mechanical Engineering, Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Define Managerial Economics. Discuss the various economic theories applied to business analysis. 14 Marks

(OR)

2 What is Elasticity of Demand? Explain Price, Cross and Income Elasticity of Demand used in managerial decision making process. 14 Marks

UNIT-II

3 Explain the cost-output relationship in the short run and in the long run. 14 Marks

(OR)

4 Explain various pricing methods and the objectives of pricing policy. 14 Marks

UNIT-III

5 What is monopolistic competition? How does a firm take its pricing and output decisions under monopolistic competition? 14 Marks

(OR)

6 What do you mean by capital? Explain different source of working capital. 14 Marks

UNIT-IV

7 What are Accounting Concepts and Conventions? Name them and explain any two Accounting Concepts. 14 Marks

(OR)

8 Journalise the following transactions. 14 Marks

Date	Particulars	Rs.
2012 Jan 1	Gopal Started business	10,000
Jan 1	Purchased goods from Bhagat	500
Jan 3	Sale of goods for cash	150
Jan 5	Purchase of goods for cash	200
Jan 6	Sale of goods to Charan	400
Jan 7	Purchase of goods from Tagore for cash	300
Jan 8	Sale of goods to Eswar for cash	250
Jan 9	Purchases	150
Jan 10	Sales	100
Jan 12	Purchase of office furniture	200
Jan 14	Purchase of stationary on credit from Swamy	100
Jan 17	Office Rent paid	50
Jan 18	Commission Received from Girish	20
Jan 19	Amount received from Charan's account	300
Jan 25	Amount paid to Bhagat towards his account	400
Jan 29	Sale of old machinery for cash	300

Jan 31	Paid Salaries	600

UNIT-V

9 Distinguish between Trading Account and Profit & Loss Account. Give a specimen of Trading and Profit & Loss Account with imaginary figures. 14 Marks

(OR)

10 Explain the importance of Computerization of accounts. Explain various challenges in Computerization of accounts in a small and medium Organizations. 14 Marks

CODE No.:14BT6HS03 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

ENTERPRENEURSHIP FOR MICRO SMALL AND MEDIUM ENTERPRISES

[Mechanical Engineering, Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	Describe the skills required for entrepreneurship.	14 Marks
	(OR)	
2	Explain the functions of an entrepreneur.	14 Marks

UNIT-II

3	What are the sources of business ideas? Explain the methods of idea generation.	14 Marks
	(OR)	
4	Write a brief note on labour problems in small scale industry in India. How do you overcome this problem, if you want to start a new business?	14 Marks

UNIT-III

5	Distinguish between Micro and Small business enterprises.	14 Marks
	(OR)	
6	Explain the policy and incentives provided by the government for promoting small enterprises in India.	14 Marks

UNIT-IV

7	Critically examine the role of commercial banks in providing finance to the small and medium enterprises.	14 Marks
	(OR)	
8	What are the reasons for sickness of small scale enterprises? What kind of institutional support is available for strengthening them?	14 Marks

UNIT-V

9	Explain the concept and functions of women entrepreneurs.	14 Marks
	(OR)	
10	What are the problems of rural entrepreneurship in our country?	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

COMPUTER ORGANIZATION

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	With the help of diagram and example, explain the floating point addition-subtraction.	8 Marks
	b)	Represent the Gray codes for the decimal numbers 0 to 15. List their advantages.	6 Marks
		(OR)	
2	a)	Discuss in detail logic micro operations.	7 Marks
	b)	Distinguish between floating point addition and subtraction using flowcharts.	7 Marks

UNIT-II

3	a)	Discuss about Wilke's Micro programmed model with flow chart.	7 Marks
	b)	Discuss about the design issues of instructions and its elements in detail.	7 Marks
		(OR)	
4	a)	Write about Micro Programmed control unit in detail.	7 Marks
	b)	Distinguish between Micro programmed control unit and Hardwired control Unit.	7 Marks

UNIT-III

5	a)	Distinguish between vectored interrupts and non-vectored interrupts.	7 Marks
	b)	Discuss in detail about Direct Memory Access (DMA).	7 Marks
		(OR)	
6		A certain disk interface accepts request to read a 1Kb block of data. It has 1Kb buffer on board its I/O interface, in which it stores the data as it comes off the drive. The interface is interrupt driven and has DMA capability. Describe the likely sequence of events from the time the processor requests a block until the data has been transferred to main memory.	14 Marks

UNIT-IV

7		What is the need for having a hierarchical memory organization and explain the same with a neat sketch.	14 Marks
		(OR)	
8	a)	List various secondary storage memories and explain any one of them.	7 Marks
	b)	A cache has 8 lines and what would be the address of cache line to transfer 12 block main memory, if the cache using direct mapping management technique.	7 Marks

UNIT-V

9	a)	Explain Arithmetic Pipelining processing with an example.	7 Marks
	b)	What are the interconnection structures and explain any one of them in detail.	7 Marks
		(OR)	
10	a)	Explain instruction pipeline with an example.	7 Marks
	b)	Discuss the characteristics of multiprocessors.	7 Marks

CODE No.:14BT40503 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

DESIGN AND ANALYSIS OF ALGORITHMS

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Write algorithms to illustrate UNION and FIND operations on sets.	14 Marks
		(OR)	
2	a)	Write and explain the final algorithm for collapse Rule with an example.	7 Marks
	b)	Explain about various asymptotic notations.	7 Marks

UNIT-II

3	a)	Explain the Stassen's Matrix Multiplication in detail.	7 Marks
	b)	Write detection algorithm of the Binary search Tree.	7 Marks
		(OR)	
4		Write and explain the control abstraction for divide and conquer and also explain the calculation of its Time complexity.	14 Marks

UNIT-III

5	a)	Define Merging and Purging Rules in 0/1 Knapsack problem.	7 Marks
	b)	Write an algorithm for all pairs shortest path and explain with an example.	7 Marks
		(OR)	
6		Prove that Greedy Knapsack generates optimal solution to the given instance of Knapsack problem, when profit weight ratio is arranged in non-increasing order.	14 Marks

UNIT-IV

7		Explain in detail how the travelling sales person's problem can be solved using LC Search Branch and Bound technique.	14 Marks
		(OR)	
8	a)	Write recursive Backtracking algorithm.	7 Marks
	b)	Explain about Explicit and Implicit conditions in Backtracking with an example.	7 Marks

UNIT-V

9		Write about non-deterministic algorithms.	14 Marks
		(OR)	
10		Explain about NP-Hard and NP-Complete classes with an example.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

OBJECT ORIENTED PROGRAMMING

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain OOP paradigm and need of OOP paradigm.	7 Marks
	b)	Explain constructor overloading with an example.	7 Marks
		(OR)	
2	a)	Explain OOP concepts - class, object with an example program.	7 Marks
	b)	Explain Parameter Passing techniques in java with examples.	7 Marks

UNIT-II

3	a)	Explain hierarchical inheritance in java with example.	7 Marks
	b)	Explain extending interfaces with example program.	7 Marks
		(OR)	
4		Explain creating, accessing and importing a user defined package with an example.	14 Marks

UNIT-III

5	a)	Explain array index out of bounds exception with an example.	7 Marks
	b)	Explain inter thread communication in java and write code for producer consumer problem in java.	7 Marks
		(OR)	
6	a)	Explain try finally exception handling mechanism with an example program.	7 Marks
	b)	Explain wait(), notify() and notifyAll() with an example program.	7 Marks

UNIT-IV

7		Develop an applet that receives three numeric values as input from the user and then displays the largest of the three on the screen. Write a HTML page and test the applet.	14 Marks
		(OR)	
8		Write an applet that shows two squares. The user should be able to drag either square with the mouse (You'll need an instance variable to remember which square the user is dragging). The user can drag the square off the applet if she wants; if she does this, it's gone. You can try it here.	14 Marks

UNIT-V

9	a)	Write a java program to establish a connection to a database.	7 Marks
	b)	Explain Servlet API.	7 Marks
		(OR)	
10	a)	Explain how to create and compile the servlet program.	7 Marks
	b)	Explain Scrollable Results.	7 Marks

CODE No.:14BT51201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

COMPUTER NETWORKS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		With the help of a neat sketch, explain TCP/IP reference model.	14 Marks
		(OR)	
2	a)	Explain the frame format and functionality of 802.11 standard protocols.	7 Marks
	b)	What is unguided transmission media? Explain with examples.	7 Marks

UNIT-II

3	a)	Write short note on Piggy Backing.	6 Marks
	b)	Compare and contrast selective repeat and Go Back-N sliding window protocols.	8 Marks
		(OR)	
4	a)	Compare and contrast static and dynamic channel allocation problems.	7 Marks
	b)	Explain the channel allocation process with CSMA/CD protocol.	7 Marks

UNIT-III

5	a)	Explain Hierarchical Routing algorithm with an example.	7 Marks
	b)	What is Flooding? What are the advantages of Flooding?	7 Marks
		(OR)	
6	a)	Define QOS. How to achieve QOS using Tocken Bucket algorithm?	7 Marks
	b)	Draw a neat sketch of IPv4, address format and explain each field in it.	7 Marks

UNIT-IV

7		What is connection establishment? How transport layer establish a connection with three-way Hand Shake mechanism? Explain in detail.	14 Marks
		(OR)	
8	a)	Explain each field in UDP Header Format with a neat diagram.	7 Marks
	b)	Write short note on Real time Transport Protocol.	7 Marks

UNIT-V

9		Explain the architecture and services of electronic mail with a neat sketch.	14 Marks
		(OR)	
10		Explain MIME message format and compare it with RFC5322.	14 Marks

CODE No.:14BT51201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

COMPUTER NETWORKS

[Computer Science and Engineering, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the types of network hardware by scale.	7 Marks
	b)	How does connection oriented services differ from connectionless services?	7 Marks
		(OR)	
2		Explain various types of guided transmission media.	14 Marks

UNIT-II

3		Explain sliding window protocol using go back **n**.	14 Marks
		(OR)	
4		Explain Carrier Sense Multiple Access protocols.	14 Marks

UNIT-III

5	a)	Explain Dijkstra shortest path routing algorithm with an example.	7 Marks
	b)	Differentiate Unicast and Multi-cast routing techniques.	7 Marks
		(OR)	
6	a)	Write a short note on Tunneling.	6 Marks
	b)	Draw a neat sketch of IP**v**6 Address format and explain each field in it.	8 Marks

UNIT-IV

7		Explain three way handshake protocol with a neat sketch.	14 Marks
		(OR)	
8	a)	What are the design issues of Transport Layer?	7 Marks
	b)	How is flow control done in Transport Layer?	7 Marks

UNIT-V

9	a)	What is the role of SMTP to transfer mails between sender and receiver?	7 Marks
	b)	Write short notes on HTTP.	7 Marks
		(OR)	
10		Define Cryptography**.** Enumerate any two transposition techniques for encryption and decryption of a data with an example.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

REINFORCED CEMENT CONCRETE STRUCTURES – II

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	A dog legged stair case has to be provided for a residential building with the staircase room size 2.2m x 4.8m (internal). The following details are given: Vertical distance between the floors = 3.2m, Waist slab thickness = 170mm Wall thickness =230, Grade of concrete used =M20, Grade of steel used = Fe415 First flight starts from foundation level. Assume that the flights are supported at the ends of landing or landing spans in the same direction as that of flight.	14 Marks
	(OR)	
2	Design a dog legged stair for a building in which the vertical distance between floors is 3.6m. The flight width of stair is 1.5m. The live load on the stair is 3kN/m^2. The floor finish has a thickness of 25mm. Draw the detailing to a scale.	14 Marks

UNIT-II

3	Design a combined rectangular footing for two columns A and B, carrying load of 500kN and 700kN respectively. Column A is 300mm x 300mm in size and column B is 400mm x 400mm in size. The centre to centre spacing of the columns is 3.4 meters. The safe bearing capacity of soil may be taken as 150kN/m^2. Use M20 grade concrete and Fe 415 HYSD bars.	14 Marks
	(OR)	
4	A R.C column, 400mm x 400mm carrying a load of 700 kN is supported on three piles 400mm x 400mm in section. The centre to centre distance between the piles is 1.5m. Design a suitable pile cap. Use M20 concrete and Fe 415 steel.	14 Marks

UNIT-III

5	Design a T-shaped retaining wall for a height of 5.50m above the ground level. It retains earth which weighs 16kN/m^3 and has an angle of repose of 30°. Maximum pressure on the ground is limited to 120kN/m^2. Use M20 concrete and Fe415 grade steel.	14 Marks
	(OR)	
6	Design the stem of cantilever retaining wall to retain earth 4.5m above ground level. The surcharge on the earth fill is 15kN/m^2. The Angle of repose of soil is 30º. Unit weight of soil is 16kN/m^3. Coefficient of friction between soil and concrete is 0.6 and the safe bearing capacity of soil is 150kN/m^2. Use M20 concrete and Fe 500 steel.	14 Marks

UNIT-IV

7	Design a rectangular water tank 5m x 4m with depth of storage 3m, resting on ground and whose walls are rigidly joined at vertical and horizontal edges. Assume M20 concrete and Fe415 grade steel. Sketch the details of reinforcement in the tank	14 Marks
	(OR)	
8	Design a conical dome roof for a room with base diameter as 10m. The live load due to wind, snow, etc may be taken as 2N/m. The height of the roof is 4m.	14 Marks

UNIT-V

9	Design a chimney of 70m height, having external diameter of 5m throughout the height. The chimney has fire brick lining of 120mm thick provided up to a height of 45m above ground level, with an air gap of 100mm. The temperature of gases above surrounding air is 200^{0}C. Take the co-efficient of expansion of concrete and steel = 11 x 10^{-6} per degree centigrade, Young's Modulus of steel = 200 Gpa, Use M25 concrete and Fe: 415 steel.	14 Marks

(OR)

10	Write the design steps involved in the design of Silo.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

FOUNDATION ENGINEERING

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the different methods of soil exploration.	6 Marks
	b)	How the Standard Penetration Test is conducted in the field and what are the corrections applied to it.	8 Marks
		(OR)	
2	a)	State the objectives of soil exploration and explain the wash boring method of soil exploration along with its merits and demerits.	8 Marks
	b)	Enumerate the different types of soil samples.	6 Marks

UNIT-II

3	a)	Discuss the Culmann's graphical method for determination of active earth pressure in cohesionless soil.	8 Marks
	b)	What are the different types of earth pressure?	6 Marks
		(OR)	
4	a)	Explain the Rebhann's graphical method for estimating active earth pressure.	10 Marks
	b)	What is the critical height of vertical excavation that can be made without any lateral support in a cohesive soil having γ = 18 kN/m^3, cohesion = 14 kN/m^2 and angle of shearing resistance = 12^0.	4 Marks

UNIT-III

5	a)	Explain briefly the standard method of slices to compute the stability of slope.	6 Marks
	b)	Calculate the factor of safety with respect to cohesion of a clay slope laid at 1 in 2 to a height of 10m, if φ = 12^0, c = 35 kN/m^2 and γ = 19 kN/m^3. What is the critical height of the slope in this soil? Assume Taylor's stability number as 0.064.	8 Marks
		(OR)	
6	a)	Classify the types of failures of a slope.	6 Marks
	b)	Calculate the safe height for an embankment rising 70^0 to the horizontal and to be made with a clayey soil having unit weight of 16kN/m^3, φ = 15^0 and a cohesion of 20kN/m^2. Factor of safety may be taken as 2.5. Value of stability number N, corresponding to slope angle α = 70^0 and φ = 15^0 is 0.14.	8 Marks

UNIT-IV

7		A square footing 1.8m x 1.8m is placed over loose sand of bulk density 16kN/m^3, saturated density 18kN/m^3 and at a depth of 1.0m. The angle of shearing resistance is 30^0. Determine the ultimate bearing capacity when there is no effect of water table and when it is submerged (for φ= 30^0, the N**c**=30.14, N**q**=18.4 and Nγ=15.1).	14 Marks
		(OR)	

8 a) How would you fix the depth of the foundation? Discuss the Rankine's formula for the minimum depth. 6 Marks

b) Determine the allowable bearing capacity of a 1.5m x 1.5m square footing placed at a depth of 2.0m in a sandy deposit having a unit weight of 19kN/m³ with observed SPT value of 37. Water table is at depth of 1.5m. Determine the allowable bearing capacity for 50mm permissible settlement after applying suitable corrections for SPT value. 8 Marks

UNIT-V

9 a) Describe the pile load test and state its limitations. 9 Marks

b) A single acting steam hammer weighing 2500N and falling through a height of 1m drives a pile. The average penetration for the last few blows is 1cm. Using the ENR formula; determine the allowable load on the pile. 5 Marks

(OR)

10 a) What are the different shapes of well foundation? Explain their comparative merits and demerits. 7 Marks

b) Discuss different types of caissons. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

TRANSPORTATION ENGINEERING - I

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Mention the salient features of Lucknow plan.	7 Marks
	b)	Classify the roads based on Nagpur plan.	7 Marks
		(OR)	
2	a)	Derive an expression for SSD.	7 Marks
	b)	Design the super elevation for the following data: Design Speed = 100 KMPH Radius of Circular curve = 225m Coefficient of lateral friction (maximum) = 0.15 Maximum super elevation = 0.07	7 Marks

UNIT-II

3	a)	What are the desirable properties of bituminous mixes? Explain in detail.	7 Marks
	b)	With the help of neat sketches, explain about the Marshal method of Mix design.	7 Marks
		(OR)	
4	a)	What are the methods of road construction considered in water logged areas?	7 Marks
	b)	Write a short note on drainage of slopes and erosion control.	7 Marks

UNIT-III

5	a)	Discuss the design of Dowel bars along with equations. What are the fundamental design concepts in Flexible Pavement?	7 Marks
	b)	Write in details about following. i) ADT & AADT. ii) Truck Factor. iii) Growth Factor. iv) Lane Distribution & Vehicle Damage Factor.	7 Marks
		(OR)	
6		What are the factors affecting flexible pavement design? Explain the IRC recommended procedure for design of flexible pavement.	14 Marks

UNIT-IV

7		What are the factors affecting pavement rigid pavement design? Elaborate IRC recommended procedure for design of rigid pavements.	14 Marks
		(OR)	
8		Explain the construction methodology of RCC pavements.	14 Marks

UNIT-V

9	a)	Draw a neat sketch of permanent way. Explain the requirements of railway track.	7 Marks
	b)	Draw a neat sketch of Left Hand Turnout.	7 Marks
		(OR)	
10	a)	Define Cant deficiency. Write the expression for it. Mention the maximum limits for various gauges.	7 Marks
	b)	Write short notes on Runway Geometric design elements.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

WASTEWATER TECHNOLOGY

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the terms (i) Sewage and (ii) Garbage.	6 Marks
	b)	Differentiate between water carriage system and conservancy system.	8 Marks
		(OR)	
2	a)	Differentiate between combined and separate systems of sewerage.	7 Marks
	b)	Explain about partially separate system of sewerage. State its merits and demerits.	7 Marks

UNIT-II

3	a)	Explain the terms (i) Average flow (ii) Dry weather flow and (ii) Maximum flow of sewage.	7 Marks
	b)	What are the various types of sewer appurtenances? Explain manholes and drop manholes with neat sketches.	7 Marks
		(OR)	
4	a)	Explain “one pipe” and “two pipe” system of plumbing for buildings and state their merits and demerits.	7 Marks
	b)	What is BOD? Deduce an expression for the first stage BOD.	7 Marks

UNIT-III

5	a)	Describe various types of screens used in sewage treatment and disposal of screenings.	7 Marks
	b)	Explain the construction and working of grit chambers.	7 Marks
		(OR)	
6	a)	Explain about screening process involved in the waste water treatment plant.	7 Marks
	b)	Differentiate between continuous and intermittent flow type settling tanks.	7 Marks

UNIT-IV

7	a)	Explain the factors which affect the biological treatment system.	5 Marks
	b)	What is meant by activated sludge? Describe with sketch the treatment of sewage by activated sludge process. Mention the advantages and disadvantages of this system.	9 Marks
		(OR)	
8	a)	Explain the construction and working of aerated lagoon.	7 Marks
	b)	Explain in brief the construction, location and working of an oxidation pond.	7 Marks

UNIT-V

9		Write a short note on Self-purification of streams. Compare the stream water and sea water dilution. Enumerate the various conditions affect the self-purification of streams.	14 Marks
		(OR)	
10		Explain the oxygen sag curve. What is the importance of Re-oxygenation and	14 Marks

de-oxygenation of stream sanitation?

CODE No.:14BT60107 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

GROUND WATER DEVELOPMENT AND MANAGEMENT

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Explain: 14 Marks
i) Hydraulic Conductivity. ii) Validity of Darcy's law.
iii) Storage coefficient. iv) Ground water flow Contours.

(OR)

2 a) Explain the different geological formations along with their special features. 7 Marks
b) Write a note on the origin of ground water. 7 Marks

UNIT-II

3 a) Derive an expression for the steady state discharge of well fully penetrating into unconfined aquifer. 7 Marks
b) Explain about leaky aquifers. 7 Marks

(OR)

4 a) Describe the Theis method of determining the aquifer parameters using the pumping test data. 7 Marks
b) Explain unsteady radial flow in a leaky aquifer with a neat sketch. 7 Marks

UNIT-III

5 a) Describe practical methods to halt and abate sea water intrusion in coastal regions. 7 Marks
b) Explain: 7 Marks
i) Occurrence of saline water intrusions. ii) Shape of interface.

(OR)

6 a) How can saline water intrusion be controlled? Explain. 8 Marks
b) Explain the recognition of seawater in groundwater. 6 Marks

UNIT-IV

7 Discuss the applications of GIS and RS in artificial recharge of ground water along with case studies. 14 Marks

(OR)

8 What are the different methods of artificial recharge of aquifers? Explain any four methods with the help of neat sketches. What are their relative merits and demerits? 14 Marks

UNIT-V

9 a) Explain Geophysical logging and Resistivity logging. 7 Marks
b) Describe the significance of sub-surface investigations. 7 Marks

(OR)

10 a) What is seismic refraction method? What are the two methods of determining the thickness of layers? Where is this method used? 7 Marks
b) Describe the significance of sub-surface investigations. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

MICROPROCESSORS AND MICROCONTROLLERS

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Explain about memory segmentation and pipelining in 8086 microprocessor. 7 Marks

b) Write an 8086 assembly language program to find maximum number in a given series of 8-bit numbers. 82H, FFH, 23H, 48H, 9AH, CFH, 99H 7 Marks

(OR)

2 a) Discuss the following Data Transfer instructions. 7 Marks

i) IN ii) MOV iii) POP iv) XLAT
v) LAHF vi) OUT vii) LEA

b) Differentiate between procedures and macros. 7 Marks

UNIT-II

3 a) What are the contents of the data bus and the status of A0 and $\overline{BHE}$ when the following instructions are executed in 8086? 7 Marks

i) CPU writes a byte 11 H at memory location 1000H : 0002 H.
ii) CPU writes a word 2211 H at memory location 1000H : 0003 H.

b) Draw and explain the block diagram of 8259 priority interrupt controller. 7 Marks

(OR)

4 a) Write the functions of the following pins of 8086. 4 Marks

i) $MN/\overline{MX}$ ii) $\overline{DEN}$ iii) ALE iv) Ready

b) It is required to interface two chips of 32K x 8 ROM and four chips of 32K x 8 RAM with 8086 according to following map. 10 Marks

ROM1 and 2: F0000H – FFFFFH
RAM1 and 2: D0000H –DFFFFH
RAM3 and 4: E0000H – EFFFFH

UNIT-III

5 a) Explain the format of mode and command register formats of 8251. 10 Marks

b) Frame the control word of 8255 PPI for port A in mode 1 as input port, port B in mode l as output port and leave the pins of port C unused. 4 Marks

(OR)

6 a) Explain the architecture of 8255 with neat diagram and also give the format of BSR control word. 9 Marks

b) What is meant by serial communication and also explain the following MODEM control lines: 5 Marks

i) DSR ii) DTR iii) RTS iv) CTS.

UNIT-IV

7 a) Compare microprocessors and microcontrollers. 6 Marks

b) Draw and discuss the formats and bit definitions of the following SFR's in 8051 microcontroller. 8 Marks

i) IP ii) TMOD iii) TCON iv) SCON.

(OR)

8	a)	Assume that ROM space of 8051 starting at 250H contains "Hello", write a program to transfer the bytes into RAM locations starting at 40H.	10 Marks
	b)	Write the features of 8051 and 8052 microcontrollers.	4 Marks

UNIT-V

9	a)	Write an assembly language program to generate a square wave of 50 Hz frequency in port 0, using timer of 8051 microcontroller. Assume XTAL=11.0592 MHz.	7 Marks
	b)	Explain the interrupt structure of 8051 microcontroller with neat sketches.	7 Marks

(OR)

10	a)	Explain the different types of timer modes available in 8051 microcontroller and its control registers.	7 Marks
	b)	Explain with a neat diagram the procedure to interface a matrix keyboard to the 8051 microcontroller, explain the algorithm and write the assembly language program to interface the keyboard.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

POWER ELECTRONICS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the operation of IGBT in detail.	7 Marks
	b)	Compare SCR and GTO.	7 Marks
		(OR)	
2	a)	Describe any one driver circuit and snubber circuit for MOSFET.	7 Marks
	b)	Draw the dynamic characteristics of SCR during turn-on and turn-off and explain.	7 Marks

UNIT-II

3		Describe the operation of single-phase, two pulse, mid-point converter with relevant voltage and current waveforms.	14 Marks
		(OR)	
4		Explain the effect of source inductance in the operation of single phase fully controlled converter. Derive the expression for its output voltage.	14 Marks

UNIT-III

5		Explain the principle of operation of single phase dual converter with resistive load.	14 Marks
		(OR)	
6		Explain the principle of single phase to single phase step down a cyclo-converter with power circuit and waveforms.	14 Marks

UNIT-IV

7	a)	Explain the operation of four quadrant chopper with neat circuit diagram.	7 Marks
	b)	A step-up chopper has input voltage of 220V and output voltage of 660V. If the non-conducting time of thyristor-chopper is 100μs, compute the pulse width of output voltage. In case pulse width is halved for constant frequency operation, find the new output voltage.	7 Marks
		(OR)	
8		Explain various control strategies of choppers.	14 Marks

UNIT-V

9		Describe the working of a single phase full bridge inverter with relevant circuit and waveforms.	14 Marks
		(OR)	
10		Explain sinusoidal pulse modulation used for PWM inverters. Write the important features of the same.	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

SWITCHGEAR AND PROTECTION

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Explain about sequence impedances and sequence networks of static equipment of power systems. 7 Marks

b) The line b of a 3-ph line feeding a balanced Y-load with neutral grounded is open resulting in line currents: $\mathbf{I_a} = 10\angle 0^0$A and $\mathbf{I_c} = 10\angle 120^0$A. Determine the sequence current components. 7 Marks

(OR)

2 a) Derive an expression for fault current when a double line to ground fault occurs on the terminals of an unloaded alternator. Draw the connections of the sequence networks during fault. 7 Marks

b) A three phase 50MVA, 11kV generators is subjected to the various faults and the currents so obtained in each fault are: 2000A for a three phase fault; 1800A for a line-to-line fault and 2200A for a line-to-ground fault. Find the sequence impedances of the generator. 7 Marks

UNIT-II

3 a) Define relay and discuss the basic requirements of relay. 7 Marks

b) Discuss the principle of operation of an Induction disc relay with relevant diagrams. 7 Marks

(OR)

4 a) Write the advantages and disadvantages of static relays. 7 Marks

b) Explain amplitude and phase comparators with block diagrams. 7 Marks

UNIT-III

5 a) Describe the rotor protection of an alternator against earth fault. 7 Marks

b) State and explain following abnormalities with respect to alternator mentioning the protective scheme employed for the same. 7 Marks

i) Excitation failure. ii) Loss of prime mover.

(OR)

6 a) While connecting the CT secondaries for differential protection of three phase transformers, the CT's on the star side have to be connected in delta and vice versa. Explain with an example. 7 Marks

b) Describe a method of protecting the transformer against internal faults. 7 Marks

UNIT-IV

7 a) Give the scheme of protection for a ring main having three substations and fed from one end. 7 Marks

b) Explain carrier current protection scheme for transmission lines. 7 Marks

(OR)

8 a) Briefly describe about protection against lightning over voltages. 7 Marks

b) Explain insulation coordination and BIL in transmission systems. 7 Marks

UNIT-V

9 a) Discuss briefly about various types of fuses and their application in protecting power systems. 7 Marks

b) Explain briefly about the arc initiation and extinction process in a circuit breaker. 7 Marks

(OR)

10 a) Explain the phenomenon of current chopping in a circuit breaker. What is the effect of current chopping on the circuit breaker as well as on the system? 7 Marks

b) What are the key features of SF_6 circuit breaker in comparison with other circuit breakers? 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

DISTRIBUTION OF ELECTRIC POWER

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write in detail about Residential and industrial loads and their respective characteristics.	7 Marks
	b)	Derive the relation between the load factor and loss factor.	7 Marks
		(OR)	
2		Define and explain coincidence factor and the contribution factors. Deduce the cases where coincidence factor is equal to contribution factor and is equal to average contribution factor.	14 Marks

UNIT-II

3	a)	Explain the design consideration of radial type distribution feeder.	7 Marks
	b)	Discuss the factors affecting the design loading of a feeder.	7 Marks
		(OR)	
4		Discuss in detail about High voltage distribution systems with the help of neat schematic diagrams.	14 Marks

UNIT-III

5	a)	Analyze the square shaped distribution substation service areas for % voltage drop and power losses.	8 Marks
	b)	Distinguish between indoor and outdoor substations.	6 Marks
		(OR)	
6	a)	Discuss the concept of service area with 'n' primary feeders.	7 Marks
	b)	Write short notes on methods of neutral grounding.	7 Marks

UNIT-IV

7	a)	Explain the principle of operation of circuit breakers employed for distribution systems.	7 Marks
	b)	What is the need for coordination? Explain in detail.	7 Marks
		(OR)	
8	a)	Determine the ratio between power loss for a single phase 2 wire ungrounded and three phase systems.	7 Marks
	b)	Explain the coordination between fuse and circuit breaker with its characteristics.	7 Marks

UNIT-V

9	a)	How an AVR can control voltage? With the aid of suitable diagram, explain its function.	7 Marks
	b)	Briefly explain about line drop compensation.	7 Marks
		(OR)	
10		Write short notes on:	
		i) Capacitor effect in the voltage control in the distribution system.	7 Marks

ii) AVR in the distribution feeder with neat diagram. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

HIGH VOLTAGE ENGINEERING

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain about electric field stress.	7 Marks
	b)	What is meant by Surge voltage? Explain distribution and control of surge voltages across H V equipment.	7 Marks
		(OR)	
2	a)	Explain the application of insulating materials in rotating machines.	7 Marks
	b)	What are the advantages of transmitting electrical power at high voltages?	7 Marks

UNIT-II

3		Explain the difference between photo-ionization and photo electric emission.	14 Marks
		(OR)	
4	a)	Describe the various factors that influence breakdown in a gas.	7 Marks
	b)	What will the breakdown strength of air be for small gaps (1mm) and large gaps (20cm) under uniform field conditions and standard atmospheric conditions?	7 Marks

UNIT-III

5	a)	Describe the working of a Van de Graaff generator with a neat sketch. What are the factors that limit the maximum voltage obtained?	7 Marks
	b)	A 12 stage impulse generator has 0.126μF condensers. The wave front and wave tail resistances connected are 800 ohms and 5000Ω respectively. If the load condenser is 1000pF, find the front and tail times of the impulse wave produced.	7 Marks
		(OR)	
6		Why is a Cockcroft-Walton circuit preferred for voltage multiplier circuits? Explain its working with a schematic diagram.	14 Marks

UNIT-IV

7		Discuss the different methods of measuring high dc voltages. What are the limitations of each method?	14 Marks
		(OR)	
8		What are the different types of resistive shunts used for impulse current measurements? Discuss their characteristics and limitations.	14 Marks

UNIT-V

9		What is 'Wagner's earthing device'? Explain how it is used for eliminating stray capacitances.	14 Marks
		(OR)	
10		Explain the power frequency and impulse voltage test conducted on bushings.	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

COMPUTER AIDED ELECTRICAL MACHINE DESIGN

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Develop an algorithm for optimization of a linear problem.	CO1	8 Marks
	b)	Prove that in a DC machine, the volume of active parts is proportional to torque of the machine.	CO2	7 Marks
		(OR)		
2	a)	What are the thermal considerations in machine design? Explain in detail.	CO1	7 Marks
	b)	A 300kW, 500V, 550 r.p.m, 6 pole DC generator is built with an armature diameter of 0.87m and core length of 0.35m .The lap wound armature has 720 conductors. Calculate the specific electric and magnetic loadings.	CO2	7 Marks

UNIT-II

3	a)	Derive the output equation of a DC machine.	CO2	5 Marks
	b)	A 5kW, 250V, 4 pole, 1500 r.p.m shunt generator is designed to have a square pole face. The loadings are: Average flux density in the gap = 0.42wb/m², ampere conductors per meter = 15000. Find the main dimensions of the machine. Assume full load efficiency = 87% and ratio of pole arc to pole pitch = 0.66.	CO3	9 Marks
		(OR)		
4	a)	Explain the detail procedure for calculation of main dimensions of DC machine.	CO3	10 Marks
	b)	What are the advantages and disadvantages of large number of poles?	CO1	4 Marks

UNIT-III

5	a)	Describe the various methods of cooling of transformers.	CO1	7 Marks
	b)	Develop an algorithm for computer aided optimal design of a transformer.	CO3	7 Marks
		(OR)		
6	a)	Derive the expression for output power in a 3-phase transformer.	CO2	7 Marks
	b)	Develop an algorithm for computer aided optimal design of a 3-phase transformer.	CO1	7 Marks

UNIT-IV

7	a)	Derive the output equation of an induction motor.	CO2	6 Marks
	b)	Determine the main dimensions of 25kW, 3-phase, 415V, 50Hz, 1480 r.p.m squirrel cage induction motor. Assume the following: Full load efficiency: 88%, Full load power factor =0.92 lag, Winding factor: 0.955, Specific magnetic loading: 0.4wb/m². Specific electrical loading: 25000A/m and the Rotor peripheral speed 20m/sec at synchronous speed.	CO3	8 Marks
		(OR)		

8	a)	Explain clearly the various steps involved in the design of wound rotor of a 3-phase induction motor.	CO1	6 Marks
	b)	A 15kW, 440V, 4 pole, 50Hz, 3-phase induction motor is built with a stator bore 0.25m and a core length of 0.16m. The specific electrical loading is 23000 ampere conductors per meter. Using data of this machine determine the core dimensions, number of stator slots and number of stator conductors for 11kW, 460V, 6 pole, 50Hz motor. Assume a full load efficiency of 84% and power factor of 0.82 lag. The winding factor is 0.955.	CO3	8 Marks

UNIT-V

9	a)	Determine a suitable number of slots and conductors per slot for the stator winding of a 3-phase, 3300V, 50Hz, 300 r.p.m alternator. The diameter is 2.3m and the axial length of the core is 0.35m. The maximum flux density in the air gap should be approximately 0.9wb/m^2. Assume sinusoidal flux distribution, use single layer winding and star connection of stator.	CO3	7 Marks
	b)	Develop an algorithm/flow chart for computer aided optimal design of a synchronous machine.	CO2	7 Marks
		(OR)		
10	a)	Explain the step by step procedure for design of turbo alternators.	CO1	7 Marks
	b)	Determine suitable stator dimensions for a 500kVA, 3300V, 50Hz, 3-phase alternator to run at 375 r.p.m. Take mean gap density over the pole pitch as 0.55wb/m^2, the specific electric loading as 25000A/m .The peripheral speed should not exceed 35m/sec.	CO3	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

DESIGN OF MACHINE ELEMENTS-II

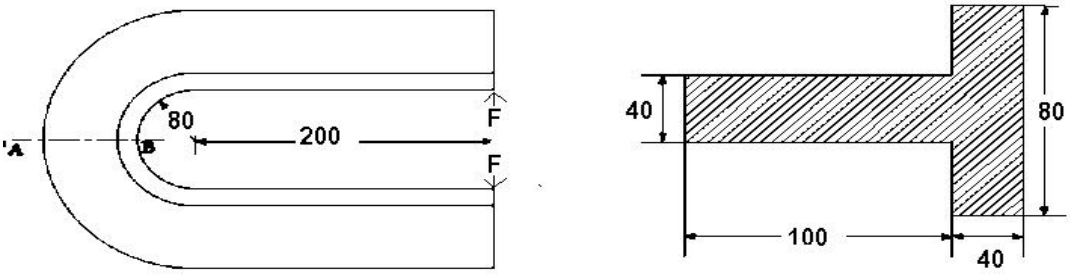
[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

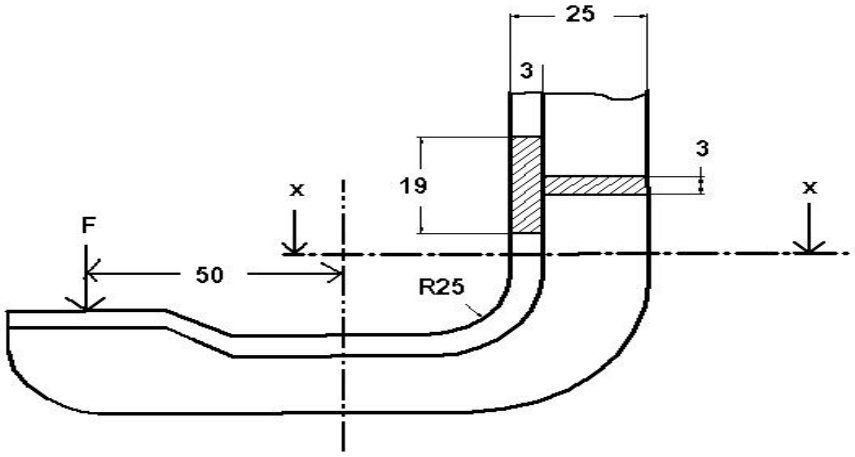
UNIT-I

1 A section of frame for a punch press is shown in figure below. Determine the capacity of the press if the maximum tensile stress in the frame is not to exceed 60MPa. 14 Marks



(OR)

2 A section of a C clamp is shown in figure. What force F can be exerted by the screw if the max tensile stress in clamp is limited to 140 MPa. 14 Marks



UNIT-II

3 A full journal bearing of 55mm diameter and 110mm long has a bearing pressure of 1.5 N/mm^2. The speed of the journal is 800 r.p.m and the ratio of the journal diameter to the diametral clearance is 1000. The bearing is lubricated with oil whose absolute viscosity at the operating temperature of 75^{0}C may be taken as 0.11Kg/m-sec. The room temperature is 35^{0}C. Find: i) The amount of artificial cooling required and, ii) The mass of the lubricating oil required, if the difference between the outlet and inlet temperature of the oil is 10^{0}C. Take specific heat of oil as 1850 J/Kg/^{0}C. 14 Marks

(OR)

4 a) What are the advantages of antifriction bearings? 3 Marks

b) A single-row deep groove ball bearing is subjected to an axial thrust load 1100N and a radial load of 2100N. Select the suitable bearing for an average life of 5 years with 8 hr/day. 11 Marks

UNIT-III

5 A pair of helical gears consist of a 20 teeth pinion meshing with a 100 teeth gear. The pinion rotates at 720 r.p.m. The normal pressure angle is 20° while the helix angle is 25°. The face width is 40mm and the normal module is 4mm. The pinion as well as gear is made of steel having ultimate strength of 600MPa and heat treated to a surface hardness of 300 B.H.N. The service factor and factor of safety are 1.5 and 2 respectively. Assume that the velocity factor accounts for the dynamic load and calculate the power transmitting capacity of the gears. 14 Marks

(OR)

6 The following particulars of a single reduction spur gear are given: Gear ratio = 10:1; Distance between centres = 660mm approximately; Pinion transmits 500kW at 1800 r.p.m.; Involute teeth of standard proportions (addendum = m) with pressure angle of 22.5°; Permissible normal pressure between teeth = 175N per mm of width. Find : 14 Marks

i) The nearest standard module if no interference is to occur.
ii) The number of teeth on each wheel.
iii) The necessary width of the pinion.
iv) The load on the bearings of the wheels due to power transmitted.

UNIT-IV

7 Design of helical compression spring used for operating a valve. The spring is subjected to a load range of 100 to 150N, i.e., 100N when the valve is closed and 150N when it is open. The deflection of the spring, i.e., the valve lift during the above load range is 7mm.Take spring index as 10. Determine the size of the wire, size and number of coils and pitch of the coils. 14 Marks

(OR)

8 Design the concentric spring with following data. 14 Marks

Load on composite springs = 1000 N
Maximum shear stress = 480 N/mm²
Spring index = 6.0
Deflection = 12 mm

UNIT-V

9 Design the Overhung Crankshaft.

i) When the crank is at dead centre. 7 Marks
ii) When the crank is at an angle of maximum twisting moment. 7 Marks

(OR)

10 Determine the dimensions of an I-section connecting rod for a petrol engine from the following data: 14 Marks

Diameter of the piston= 110mm, Mass of the reciprocating parts = 2 kg Length of the connecting rod from centre to centre= 325mm, Stroke length= 150mm R.P.M.= 1500 with possible over speed of 2500, Compression ratio=4:1 Maximum explosion pressure= 2.5 N/mm².

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

OPERATIONS RESEARCH

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Solve the following Linear Programming Problem (LPP). 14 Marks

$Max\ Z = 4x_1 + 6x_2 + 2x_3 \quad st$

$4x_1 - 4x_2 \le 5, -x_1 + 6x_2 \le 5, -x_1 + x_2 + x_3 \le 5$

$x_i \ge 0$

(OR)

2 A firm produces two types of toys. Labour time required for first type is twice that of the second type. If the first type alone is produced, the firm can produce 1000 numbers per day. In a day, a maximum of 300 and 500 numbers of first and second type of toys respectively can be sold. The profit per toy is Rs. 10/- for the first type and Rs. 6/- for the second type. i) Formulate an LPP to maximize profit per day. ii) Solve graphically and verify its solution with simplex method. 14 Marks

UNIT-II

3 a) Give the mathematical formulation of transportation problem. 7 Marks

b) Use Vogel's' approximate method to obtain an initial basic feasible solution of the transportation problem and find the optimal solution. 7 Marks

	W	X	Y	Z	Supply
A	11	13	17	14	250
B	16	18	14	10	300
C	21	24	13	10	400
Demand	200	225	275	250	

(OR)

4 A firm manufacturing a single product has plant I, II, III. The three plants haves produced 60, 35 and 40 units respectively during this month. The firm had made a commitment to sell 22 units to customer A, 45 units to customer B, 20 units to customer C, 18 units to customer D and 30 units to customer E. Find the minimum possible transportation cost of shipping the manufactured product to five customers. The net per unit cost of transporting form the three plants to five customers is given in the table. 14 Marks

	A	B	C	D	E
I	4	1	3	4	4
II	2	3	2	2	3
III	3	5	2	4	4

UNIT-III

5 From the activity details given below, determine the optimal project duration by taking indirect cost as Rs.4.50/day. 14 Marks

Activity	Normal time(days)	Crash time(days)	Cost slope Rs/day
1-2	3	1	4
2-3	4	2	4
2-4	7	3	1

3-4	5	2	2

(OR)

6 From the activity details given below, determine the optimal project duration by taking indirect cost as Rs.70/day. 14 Marks

Normal			Crash	
Activity	Time	Cost	Time	Cost
1-2	8	100	6	200
1-3	4	150	2	350
2-4	2	50	1	90
2-5	10	100	5	400
3-4	5	100	1	200
4-5	3	80	1	100

UNIT-IV

7 a) Explain the Kendal notations for representing the queuing model. 7 Marks

b) A television repair men finds that the time spent on his jobs has an exponential distribution with a mean of 30 minutes. If he repairs the sets in the order in which in which they came in and if the arrival of sets follows a Poisson distribution with an approximate average rate of 10 per 8-hour day, what is the repairmen‘s expected idle time each day? How many jobs are ahead of the average set just brought in? 7 Marks

(OR)

8 A newspaper boy buys paper for Rs 3.00 and sells them for Rs.5.00 each. He cannot return unsold newspapers. Daily demand has the following distribution. 14 Marks

No. of customers	23	24	25	26	27	28	29	30	31	32
Probability	0.01	0.03	0.06	0.1	0.20	0.25	0.15	0.10	0.05	0.05

Simulate the system for 12 days and estimate average profit per day if he orders 28 papers per day. Take random numbers as 82 89 78 24 53 61 18 45 04 23 50 77.

UNIT-V

9 Solve the following game and give the optimal strategies of the players and the value of the game. 14 Marks

		Player B			
		I	II	III	IV
Player A	I	20	15	12	35
	II	25	14	8	10
	III	40	2	19	5
	IV	5	4	11	0

(OR)

10 A and B play game in which each has three coins 5p, 10p and 20p. Each selects a coin without the knowledge of the others choice. If the sum of the coins is an odd amount, A wins B’s coin. If the sum is even, B wins A’s coin. Construct the payoff matrix and find the best strategy for each player and the value of the game. 14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

HEAT TRANSFER

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 A 3cm OD steam pipe is to be covered with two layers of insulation each having a thickness of 2.5cm. The thermal conductivity of one material of insulation is 5 times that of the other. Determine the effect of placing the better insulating material next to pipe than it is placed as an outer layer. Assume that the outside and inside surface temperatures are same. 14 Marks

(OR)

2 Derive the expression for the general 3D heat conduction equation in cartesian coordinate system with neat sketch. 14 Marks

UNIT-II

3 a) Derive expression for the "temperature distribution" and the "rate of heat flow" for the case of short fin end insulated. 10 Marks

b) Sketch four different types of fin configurations. 4 Marks

(OR)

4 a) What are Heisler charts? Explain their significance in solving transient conduction problem. 5 Marks

b) A motor body is 360mm in diameter (outside) and 240mm long. Its surface temperature should not exceed 55°C when dissipating 340W. Longitudinal fins of 15mm thickness and 40mm height are proposed. The convection coefficient is 40W/m² °C. Determine the number of fins required. Atmospheric temperature is 30°C. Thermal conductivity = 40W/m°C. 9 Marks

UNIT-III

5 A 400-W cylindrical resistance heater is 1 m long and 0.5cm in diameter. The resistance wire is placed horizontally in a fluid at 20°C. Determine the outer surface temperature of the resistance wire in steady operation if the fluid is (i) Air and (ii) Water. (Ignore any heat transfer by radiation). Use properties at 500°C for air and 40°C for water. 14 Marks

(OR)

6 a) Water is cooled in the annual section of double pipe heat exchanger with inner tube containing evaporating refrigerant vapour at 5°C. The inner tube is 2.5cm outer diameter and the outer pipe is 5cm inner dia. The average bulk temperature of water is 10°C. For the flow rates of water of (i) 0.055 kg/s (ii) 0.400 kg/s, determine the convection coefficient. The outside is insulated. Also calculate the same for flow of water in the inside of tube with refrigerant outside for circular section. Assume thin tube. 10 Marks

b) Explain with neat sketch, the hydrodynamic and thermal entrance region for flow over a flat plate. 4 Marks

UNIT-IV

7 a) Sketch the temperature variation in parallel flow and counter flow heat exchangers. 5 Marks

b) In a double pipe counter flow heat exchanger, 10000kg/h of an oil having a specific heat of 2095J/kg K is cooled from 80°C to 50°C by 8000kg/h of water entering at 25°C. Determine the heat exchanger area for an overall heat transfer coefficient of 300W/m²K. 9 Marks

(OR)

8 a) Write a short note on compact heat exchangers. 5 Marks

b) A cross flow heat exchanger in which both fluids are unmixed is used to heat water with engine oil. Water enters at 30°C and leaves at 85°C at rate of 1.5kg/s, while the engine oil with C_p= 2.3kJ/kg K enter at 120°C with a mass flow rate of 3.5kg/s. The heat transfer surface area is 30m². Calculate the overall heat transfer co-efficient by using LMTD method. 9 Marks

UNIT-V

9 a) Define emissivity, absorptivity and reflectivity. 6 Marks

b) Two large parallel plates are kept at 1000°C and 500°C. 8 Marks

i) Determine heat radiated.

ii) If the respective emissivities are 0.8 and 0.5, determine heat radiated.

(OR)

10 Consider two large parallel plates; one at 1000K with emissivity 0.8 and other is at 300K having emissivity 0.6. A radiation shield is placed between them. The shield has emissivity as 0.1 on the side facing hot plate and 0.3 on the side facing cold plate. Calculate percentage reduction in radiation heat transfer as a result of radiation shield. 14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

CAD-CAM

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 With a neat sketch, explain the product cycle in a computerized manufacturing environment. 14 Marks

(OR)

2 Mention the objectives of Graphical Kernel system and discuss about any IGES and STEP formats. 14 Marks

UNIT-II

3 Discuss about the working of a DDA algorithm with a neat sketch. 14 Marks

(OR)

4 A triangle ABC having vertices A (1,1), B (1,7) and C (5,4) is scaled by 3 units in x-direction and then rotated by 30^0 in anticlockwise direction keeping point (1,1) fixed. Find the transformation. 14 Marks

UNIT-III

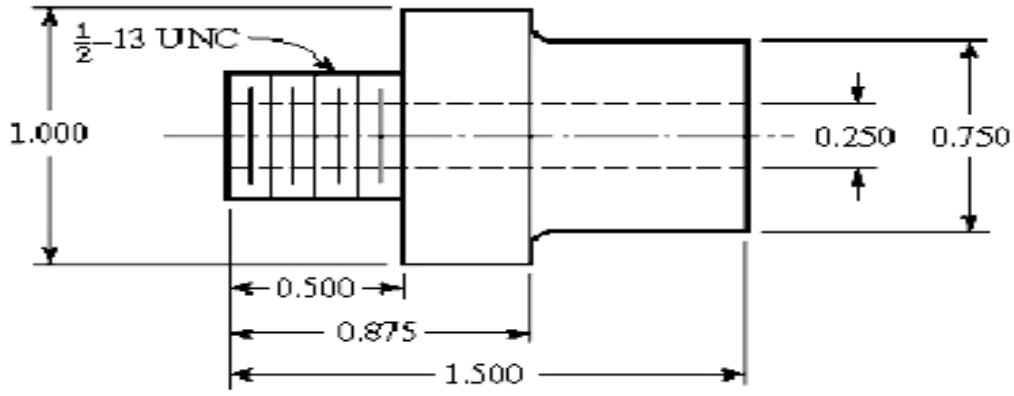
5 Define Numerical Control? Explain the Components of Numerical Control system. 14 Marks

(OR)

6 Briefly explain the two approaches in the Adaptive Control Machining system. 14 Marks

UNIT-IV

7 What is meant by part classification and coding? Develop the opitz form code (first 5 digit) with justification for the component shown in figure. 14 Marks



(OR)

8 What is meant by CAPP? With a neat sketch, explain about the working of a Generative CAPP system. 14 Marks

UNIT-V

9 Define CIM and discuss the classification of various types of material handling systems. 14 Marks

(OR)

10 Classify various types of inspection systems. Discuss about the Integration of CAQC with CAD/CAM. 14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

ARTIFICIAL INTELLIGENCE AND ROBOTICS

[Mechanical Engineering, Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Explain in detail about the following search space control: 14 Marks
i) Depth first search. ii) Breadth first search.

(OR)

2 Discuss in detail about the following: 14 Marks
i) Constraint satisfaction end analysis. ii) Means end analysis.

UNIT-II

3 a) Write a brief note on knowledge representation. 7 Marks
b) Explain the concepts of simple facts in logic, resolution in the terms of predicative logic. 7 Marks

(OR)

4 Write a short notes on the following : 14 Marks
i) Frames. ii) Slots. iii) Scripts.

UNIT-III

5 Illustrate the following: 14 Marks
i) Robot classifications.
ii) Robot workspace.
iii) Robot notations.

(OR)

6 Describe the following sensors: 14 Marks
i) Inductive sensors.
ii) Capacitive sensors.
iii) Ultrasonic sensors.

UNIT-IV

7 Demonstrate the Val-II Language structure with suitable application. 14 Marks

(OR)

8 Discuss in detail about various Robot Task level languages. 14 Marks

UNIT-V

9 List general consideration for obstacle avoidance. Analyze the importance of obstacle avoidance in industrial transportation with suitable example. 14 Marks

(OR)

10 Discuss the graph-search technique in problem solving with necessary flow diagram. 14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

DIGITAL SIGNAL PROCESSING

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Check the stability of the systems defined by, 6 Marks

(i) $y(n) = x(n) + \frac{1}{2}x(n-1) + \frac{1}{4}x(n-2)$

(ii) $y(n) = \sum_{k=-\infty}^{n+5} x(k)$

b) Find the forced response of the system described by the difference equation 8 Marks
$y(n) - 4y(n-1 + 4y(n-2) = x(n) - x(n-1)$, when input is $x(n) = (-1)^n u(n)$.

(OR)

2 a) For the given spectra $X(e^{jw})$, find the positive time sequence x(n). 4 Marks

$$X(e^{jw}) = \frac{e^{jw}}{e^{2jw} + 0.1e^{jw} - 0.02}$$

b) Determine the frequency response and plot the magnitude and phase response for the system, $y(n) = x(n) + 0.9x(n-2) - 0.4y(n-2)$. 10 Marks

UNIT-II

3 a) Prove the following properties of DFT when X(k) is the DFT of N-point sequence $x(n)$. 8 Marks
(i) $X(k)$ is real and even when $x(n)$ is real and even.
(ii) $X(k)$ is imaginary and odd when $x(n)$ is real and odd.

b) For the given $x_1(n)$, $x_2(n)$ and N find $x_1(n) \textcircled{N} x_2(n)$. 6 Marks
$x_1(n) = \delta(n) + \delta(n-1) - \delta(n-2) - \delta(n-3)$
$x_2(n) = \delta(n) - \delta(n-2) + \delta(n-4)$,
N=6.

(OR)

4 a) Find DFT of the sequence $x(n) = \{2,2,2,2\}$ using DIT FFT algorithm. 4 Marks

b) Find IDFT of the following sequence using DIF FFT algorithm. 10 Marks
$X(k) = \{4,1-j2.414,0,1-j0.414,0,1+j0.414,0,1+j2.414\}$

UNIT-III

5 a) Distinguish between Butterworth and Chebysheve type-1 filters. Derive the expression for order 'N' of analog Butterworth lowpass filter for given specifications. 6 Marks

b) Design an analog Butterworth lowpass filter that has -2dB passband attenuation at frequency of 20 rad/sec and atleast -10dB stopband attenuation at 30 rad/sec. 8 Marks

(OR)

6 a) What are the different forms of IIR filter realization? Realize the system given by difference equation, 8 Marks
$y(n) = -0.1\,y(n-1) + 0.72y(n-2) + 0.7x(n) - 0.252x(n-2)$ in parallel form.

b) Obtain the cascade realization for the following system. 6 Marks

$$H(z) = \frac{\left(1 + \frac{3}{2}z^{-1} + \frac{1}{2}z^{-2}\right)\left(1 - \frac{3}{2}z^{-1} + z^{-2}\right)}{\left(1 + z^{-1} + \frac{1}{4}z^{-2}\right)\left(1 + \frac{1}{4}z^{-1} + \frac{1}{2}z^{-2}\right)}$$

UNIT-IV

7 a) Discuss about characteristics of linear phase FIR filters. 8 Marks

b) What are the effects of windowing? 6 Marks

(OR)

8 Design highpass filter using hamming window with a cutoff frequency of 1.2 rad/sec and N = 9. Consider 14 Marks

$$H_d(e^{j\omega}) = e^{-j\alpha\omega} \qquad \omega_c \leq |\omega| \leq \pi$$
$$= 0 \qquad \text{otherwise}$$

Also find $H(e^{j\omega})$ and realize designed filter

UNIT-V

9 Discuss about the following with respect to programmable DSPs. 14 Marks

i) Short direct addressing mode.

ii) Circular addressing.

iii) TDM serial port.

(OR)

10 Discuss about following with respect to TMS320C6X DSP processor. 14 Marks

i) Functional Units.

ii) Control Register.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

MICROWAVE ENGINEERING

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Name different electromagnetic frequency spectrum region and microwave band designations for CCIR/IEEE/US military bands.	7 Marks
	b)	Determine the characteristic wave impedance of a rectangular wave guide with dimension of 3 x 2cm operates in the TM11 mode at 10 GHz.	7 Marks

(OR)

2	a)	What is a cavity resonator? Discuss the applications of cavity resonators.	7 Marks
	b)	A rectangular wave guide is filled by dielectric material of ε_r= 9 and has dimensions of 7 x 3.5cm. It operates in the dominant TE mode. i) Determine the cut off frequency. ii) Find the phase velocity in the guide at a frequency of 2 GHz. iii) Find the guided wave length at 2GHz.	7 Marks

UNIT-II

3		Explain the following with a neat diagram. a) Tuning screws. b) Posts. c) Matched loads.	14 Marks

(OR)

4	a)	Define Faraday rotation. Explain the construction and operation of Isolator.	7 Marks
	b)	Define S-matrix. Derive the S-matrix of a directional copler.	7 Marks

UNIT-III

5	a)	Derive the expression for power output and efficiency of a reflex klystron and explain bunching process.	7 Marks
	b)	Define velocity modulation and current modulation. Distinguish between velocity modulation and current modulation.	7 Marks

(OR)

6	a)	Explain the operation of a two cavity klystron amplifier with neat diagram.	7 Marks
	b)	Derive the expression of input power and output power of a catcher cavity in two cavity klystron amplifier.	7 Marks

UNIT-IV

7	a)	What are axial fields in a magnetron? Explain the production of sustained oscillations in it.	7 Marks
	b)	Derive the expression for cut-off magnetic field for a cylindrical magnetron.	7 Marks

(OR)

8	a)	Explain the construction and working of a cylindrical magnetron.	7 Marks
	b)	Define the Hull cut-off condition. Distinguish between TWT and Magnetron.	7 Marks

UNIT-V

9	a)	Explain the modes of operation for Gunn diode.	7 Marks
	b)	Explain the operation and V-I characteristics of the varactor diode.	7 Marks

(OR)

10		Explain about: i) IMPATT diode. b) TRAPATT diode.	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

VLSI DESIGN

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Design CMOS using twin tub process with suitable figures.	10 Marks
	b)	Compare Bipolar and CMOS technology.	4 Marks
		(OR)	
2		Discuss all four types of alternative forms of pull ups.	14 Marks

UNIT-II

3	a)	Discuss VLSI design flow of IC design process with the suitable figure.	6 Marks
	b)	Explain the p-well CMOS process.	8 Marks
		(OR)	
4	a)	Write about sheet resistance and area capacitance.	6 Marks
	b)	Evaluate the gate capacitance value of 5μm technology minimum size transistor with gate to channel capacitance value is $\mathbf{4 \times 10^{-4}}$pF/μm^2.	8 Marks

UNIT-III

5	a)	Draw and explain the operation of Barrel shifter with neat diagram.	7 Marks
	b)	Design transmission based adder and compare its performance with other adders.	7 Marks
		(OR)	
6		Discuss about the classification of array multipliers and explain any one in detail.	14 Marks

UNIT-IV

7	a)	Write short notes on: (i) PLA and (ii) PAL	6 Marks
	b)	Explain the architecture of 22V10 PAL architecture.	8 Marks
		(OR)	
8	a)	Explain the programming methods of FPGA.	7 Marks
	b)	Describe high density memory elements used in VLSI design.	7 Marks

UNIT-V

9	a)	Compare different design styles.	6 Marks
	b)	Discuss all four types of simulations.	8 Marks
		(OR)	
10	a)	Explain the system level test techniques.	7 Marks
	b)	Show how layout design improves the testability.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

IMAGE PROCESSING

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define a pixel. Explain how a digital image is represented using a neat diagram.	7 Marks
	b)	List the properties of 2D-DFT.	7 Marks
		(OR)	
2	a)	Using mathematical expression, define the 2-D discrete Fourier transform and mention its properties.	7 Marks
	b)	Describe the Walsh transform coefficients for N = 8.	7 Marks

UNIT-II

3	a)	Describe any two intensity transformation functions and mention their applications.	7 Marks
	b)	Explain the concept of histogram equalization and mention its applications.	7 Marks
		(OR)	
4	a)	Explain the method of image smoothing in frequency domain.	7 Marks
	b)	With neat block diagram, explain the Homomorphic filtering.	7 Marks

UNIT-III

5	a)	Explain image restoration in the presence of noise.	7 Marks
	b)	Explain the concept of Weiner filter with respect to Image restoration.	7 Marks
		(OR)	
6	a)	What is Inverse filtering with reference to Image restoration?	7 Marks
	b)	Explain the various noise models which are considered in Image restoration.	7 Marks

UNIT-IV

7	a)	Explain Run length coding by taking a suitable example.	7 Marks
	b)	Define compression ratio. What is the need for image compression?	7 Marks
		(OR)	
8	a)	Explain in detail about Bit-plane coding with reference to Image compression.	7 Marks
	b)	Discuss the various types of redundancies in images.	7 Marks

UNIT-V

9	a)	Discuss about point detection, line detection and edge detection.	7 Marks
	b)	Describe the different models for representation of colour information in images.	7 Marks
		(OR)	
10	a)	Describe the different methods for edge detection used for image segmentation.	7 Marks
	b)	Write short notes on pseudo colour image processing.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

PRINCIPLES OF COMMUNICATION

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the block diagram of a communication system.	7 Marks
	b)	Find the fourier Transform of: i) $x(t)=\cos w_0 t$. ii) $x(t)=\sin w_0 t$.	7 Marks
		(OR)	
2	a)	Explain the effect of PSD on Transfer function.	7 Marks
	b)	Show that $R_{12}(\tau)=R_{21}(-\tau)$.	7 Marks

UNIT-II

3	a)	Explain the principle of V.S.B Transmission. What are its advantages over S.S.B?	7 Marks
	b)	The antenna current of an AM transmitter is 9A when only carrier is transmitted but it increases to 10.6A, when the carrier is modulated by a single sine wave. Find the percentage of modulation. Determine the antenna current when the percentage of modulation changes to 0.8.	7 Marks
		(OR)	
4	a)	Explain clearly about pre-emphasis and de-emphasis in FM wave.	7 Marks
	b)	Explain the difference between DSB and SSB system.	7 Marks

UNIT-III

5	a)	Explain the process of generation of PWM with neat diagrams.	7 Marks
	b)	Define Pulse Amplitude Modulation (PAM). Give merits and demerits of PAM.	7 Marks
		(OR)	
6	a)	Distinguish FDM and TDM. What do you mean by asynchronous multiplexing?	5 Marks
	b)	What is PWM? What other names does it have? With the help of a circuit diagram, explain PWM demodulation and explain its operation.	9 Marks

UNIT-IV

7	a)	Derive an expression for the spectrum of BPSK and sketch it.	7 Marks
	b)	What is a delta modulation? Explain its block diagram.	7 Marks
		(OR)	
8	a)	Draw the block diagram of binary PSK receiver and explain the working principle.	8 Marks
	b)	Distinguish between uniform and non uniform quantization.	6 Marks

UNIT-V

9	a)	Define mutual information. State and prove the properties of it.	7 Marks
	b)	Explain the concept of Huffman coding technique by taking an example.	7 Marks
		(OR)	
10	a)	Describe the steps involved in the generation of linear block codes. Define and explain the properties of syndrome.	7 Marks
	b)	Distinguish block codes and convolutional codes.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

OBJECT ORIENTED ANALYSIS AND DESIGN

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Explain the following with UML notation. i) Behavioral things. ii) Grouping things. iii) Annotational things.	14 Marks
		(OR)	
2	a)	Write the importance of modeling.	7 Marks
	b)	Briefly explain about object oriented modeling.	7 Marks

UNIT-II

3	a)	Discuss briefly about classical analysis, domain analysis and behavioural analysis.	7 Marks
	b)	What do you mean by a class diagram? Explain how a class diagram represents logical design and structural design of a system.	7 Marks
		(OR)	
4	a)	Explain the modeling techniques used for writing class diagrams with an example.	7 Marks
	b)	Explain with an example how an object diagram is used to represent a scenario in the logical design of a system.	7 Marks

UNIT-III

5		Design an activity diagram that specifies the flow of control involved in registering a new student in a University.	14 Marks
		(OR)	
6	a)	Describe interaction diagram. What are their contents and common properties?	7 Marks
	b)	What is the purpose of use case diagram? Where do we use them?	7 Marks

UNIT-IV

7		Design a UML diagram which models IPC in a distributed reservation system with processes spread across four nodes. Briefly explain.	14 Marks
		(OR)	
8	a)	What is an event? Briefly explain how to model events in UML with an example.	7 Marks
	b)	Give the state machine diagram for ATM.	7 Marks

UNIT-V

9	a)	What do you mean by software design and architecture? Discuss different steps involved in pipe-and-filter architectural model.	7 Marks
	b)	Explain about the deployment modeling processors and devices and API.	7 Marks
		(OR)	
10	a)	Explain the deployment diagrams for modeling a fully distributed system.	7 Marks
	b)	Explain the component diagrams for representing physical data base for a client-server system.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

INDUSTRIAL INSTRUMENTATION-II

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the terms head effect and ambient temperature effect. Discuss about methods to compensate these effects in detail.	7 Marks
	b)	Bring out the differences between RTD and thermister.	7 Marks
		(OR)	
2	a)	Explain about the nonlinearity present in thermister. Describe a method to compensate for nonlinearity in thermister.	7 Marks
	b)	Explain the principle and working of optical pyrometer with a neat sketch.	7 Marks

UNIT-II

3	a)	What is Reynold's number? How does it come in for flow calculations? How laminar and non-laminar flows are related to Reynold's number?	7 Marks
	b)	Discuss the excitation schemes used in electromagnetic flowmeters	7 Marks
		(OR)	
4	a)	Classify positive displacement type flowmeters and compare them in terms of size, accuracy and temperature.	7 Marks
	b)	How the flowrate is measured using turbine flowmeter?	7 Marks

UNIT-III

5	a)	Describe an ultrasonic level gauging system that uses modular type ultrasonic type range detectors.	7 Marks
	b)	How the level is measured using gauge glass technique coupled with photoelectric readout system.	7 Marks
		(OR)	
6	a)	Explain the principle of operation of displacer type level measuring scheme with neat sketch.	7 Marks
	b)	With a neat schematic, explain the method of level measurement using differential bellows element type level transmitter.	7 Marks

UNIT-IV

7	a)	Describe how a Wheatstone bridge may be used to control various physical parameters.	7 Marks
	b)	Define the term 'null' as applied to bridge measurement, illustrate with example.	7 Marks
		(OR)	
8	a)	Explain the working of an auto zero amplifier.	7 Marks
	b)	Describe in brief the different methods used for measurement of medium resistances.	7 Marks

UNIT-V

9	a)	Explain the construction and working of ultrasonic limit switch.	7 Marks
	b)	Can we use the hydrostatic tests to detect leakage in pressure vessels such as pipelines, plumbing, gas cylinders, boilers and fuel tanks? Justify your answer.	7 Marks
		(OR)	
10	a)	Discuss how hall effect can be used to detect proximity.	7 Marks
	b)	With a neat schematic, explain principle construction and working of Thermal conductivity leak detectors.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

PROCESS CONTROL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain in detail about characteristics and modeling of a thermal system.	7 Marks
	b)	Develop mathematical model for an interacting two tank system.	7 Marks
		(OR)	
2	a)	Define Self-regulation. Give an example of a self-regulated process.	7 Marks
	b)	Explain about various symbols used for P&ID in instrumentation.	7 Marks

UNIT-II

3	a)	Explain in detail about composite control modes.	7 Marks
	b)	Discuss about two-position control with example. Why differential gap is used in the system?	7 Marks
		(OR)	
4	a)	Explain the pneumatic force type PI controller with a neat sketch.	7 Marks
	b)	Explain the electronic type PID controller with a neat sketch.	7 Marks

UNIT-III

5	a)	Explain in detail about determination optimum settings for mathematically described process using time response.	7 Marks
	b)	Discuss process reaction curve method for control loop tuning.	7 Marks
		(OR)	
6	a)	Discuss direct synthesis method for control tuning.	7 Marks
	b)	Explain the method of tuning of controllers by Ziegler-Nichols method.	7 Marks

UNIT-IV

7	a)	Explain valve positioner with a neat diagram.	7 Marks
	b)	Discuss about any one type of pneumatic actuator with neat diagram.	7 Marks
		(OR)	
8	a)	Explain in detail about cavitations.	7 Marks
	b)	List different types of valves and elaborate on butterfly valves.	7 Marks

UNIT-V

9	a)	Compare the feed forward and feedback controllers.	7 Marks
	b)	Explain in detail about inferential control with a suitable example.	7 Marks
		(OR)	
10	a)	Write short notes on heat exchanger.	7 Marks
	b)	Explain a control scheme of binary distillation column.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

WEB PROGRAMMING

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is "organizing text in HTML"? Give syntax and example for tags related to organizing text.	7 Marks
	b)	What are "Custom data attributes"? Give an example.	7 Marks
		(OR)	
2	a)	State and explain various elements and their attributes used while using links and URLs.	7 Marks
	b)	Explore in-detail about desktop notifications.	7 Marks

UNIT-II

3	a)	State and explore various CSS selectors.	7 Marks
	b)	What is the role of *JavaScript* in web designing? Explain its features.	7 Marks
		(OR)	
4	a)	State and explain various features and advantages of CSS3.	7 Marks
	b)	Write a *JavaScript* code that validates various elements of the student registration form.	7 Marks

UNIT-III

5	a)	Write a PHP program to implement Multilevel Inheritance.	7 Marks
	b)	Discuss about Multidimensional arrays in PHP.	7 Marks
		(OR)	
6	a)	Write PHP program to read today's date and print tomorrow's date.	7 Marks
	b)	Briefly explain about functions concept in PHP.	7 Marks

UNIT-IV

7	a)	How to create destroy session and manage session variables? Explain.	7 Marks
	b)	Why session handling is necessary and useful? Explain.	7 Marks
		(OR)	
8		Explain the following i) Cookies. ii) Web forms. iii) Session Handlers.	14 Marks

UNIT-V

9	a)	Define XML Schema. Show how an XML Schema can be created.	7 Marks
	b)	Explain DOM and SAX.	7 Marks
		(OR)	
10		Explain the following terms related to XML. i) XML parsing. ii) XML browsers. iii) XML editors. iv) XML validators.	14 Marks

CODE No.:14BT70304 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

INDUSTRIAL AUTOMATION AND ROBOTICS

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define programmable automation and its advantages.	6 Marks
	b)	Discuss about types and strategies of automation.	8 Marks
		(OR)	
2	a)	Describe about various methods of line balancing.	7 Marks
	b)	Explain about various elements of the parts delivery system.	7 Marks

UNIT-II

3	a)	Compare Hydraulic and Pneumatic drive.	6 Marks
	b)	Explain the classification of robot according to control system and configuration.	8 Marks
		(OR)	
4	a)	Write short notes on Joint Notation Scheme.	7 Marks
	b)	Write short notes on technical specification in Robotics.	7 Marks

UNIT-III

5	a)	Define Forward and Reverse Kinematics of Robot.	4 Marks
	b)	Find the Forward and Reverse kinematics of Transformation of 3DOF of robot arm.	10 Marks
		(OR)	
6	a)	Draw the Twisting and Revolving Joint.	6 Marks
	b)	With neat sketch, explain briefly about the working of Pneumatic manipulators used in robot.	8 Marks

UNIT-IV

7	a)	Write a short note on potentiometers and resolver.	7 Marks
	b)	Discuss in detail about velocity sensors and their uses.	7 Marks
		(OR)	
8	a)	Explain briefly about Resolver and LVDT working principle.	8 Marks
	b)	Explain briefly about safety measures used in robot work volume.	6 Marks

UNIT-V

9	a)	How robots are applied in assembly operations? Explain in detail.	7 Marks
	b)	How robots are helpful in spray coating?	7 Marks
		(OR)	
10		Explain the Robot programming languages in detail.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

COMPILER DESIGN

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Differentiate between compiler and interpreter.	7 Marks
	b)	What is compiler? Explain in brief about phases of a compiler.	7 Marks
		(OR)	
2	a)	Explain in detail Lex program structure along with an example.	7 Marks
	b)	Explain the input buffering scheme employed by the lexical analyzer with an example.	7 Marks

UNIT-II

3	a)	What is Left – factoring? Eliminate left – factoring for the grammar. S → iEtS / iEtSeS/a E → b.	7 Marks
	b)	Construct the predictive parser for the following grammar. S → (L) | a L → L , S | S	7 Marks
		(OR)	
4	a)	Construct SLR Parsing table for the grammar S→CC, C→cC/d.	7 Marks
	b)	Write short notes on limitations of top - down Parsing.	7 Marks

UNIT-III

5	a)	Define Type Checker. Write down the specification of a simple Type Checker.	7 Marks
	b)	Write short notes on overloading of functions and operators.	7 Marks
		(OR)	
6	a)	Distinguish between Inherited and Synthesized Attributes with suitable examples.	7 Marks
	b)	What is an annotated parse tree? Shows an annotated parse tree for the input string 3 * 5 + 4 n.	7 Marks

UNIT-IV

7	a)	Explain the limitations of static allocation.	6 Marks
	b)	What is a symbol table? Explain briefly the data structures for symbol table.	8 Marks
		(OR)	
8	a)	Explain the storage allocation in unstructured languages.	7 Marks
	b)	Give a note on back patching.	7 Marks

UNIT-V

9	a)	Explain in detail about principal sources of optimization with an example.	7 Marks
	b)	Discuss in detail the role of dead code elimination and strength reduction during code optimization of a compiler.	7 Marks
		(OR)	
10	a)	Generate code for the basic block: t_1=b+c t_2=d*e.	6 Marks
	b)	Explain in brief about Peephole optimization.	8 Marks

CODE No.:14BT71507 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC14) Supplementary Examinations May - 2019

SOFTWARE PROJECT MANAGEMENT

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the role of requirement driven functional decomposition.	7 Marks
	b)	Discuss about the two basic parameters of software cost model.	7 Marks
		(OR)	
2	a)	Describe the three level of process used in software organization.	7 Marks
	b)	Explain about the peer inspection in software economics.	7 Marks

UNIT-II

3		Describe the two stages of the life cycle to active economies of scale and higher returns on investment.	14 Marks
		(OR)	
4	a)	Explain the principles of modern software management.	8 Marks
	b)	Explain the general quality improvements with a modern process.	6 Marks

UNIT-III

5	a)	Discuss about the requirement and design sets used in artifact.	7 Marks
	b)	Describe about the pragmatic artifacts.	7 Marks
		(OR)	
6	a)	Explain about the iteration workflow.	7 Marks
	b)	Describe the architecture for software project with respect to management perspective.	7 Marks

UNIT-IV

7	a)	Discuss about periodic status assessments.	5 Marks
	b)	Explain in detail about Line of Business Organizations.	9 Marks
		(OR)	
8	a)	Describe about the round-trip engineering.	7 Marks
	b)	Differentiate between configuration baseline and control board.	7 Marks

UNIT-V

9	a)	Write about seven core metrics used in software project.	7 Marks
	b)	Explain about the quality indicators used in software development.	7 Marks
		(OR)	
10	a)	Explain about the process maturity in software project.	7 Marks
	b)	Explain the role of cooperation of stakeholder will drive software process.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

MANAGERIAL ECONOMICS AND PRINICIPLES OF ACCOUNTANCY

[Mechanical Engineering, Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	Define Law of demand. Explain the important assumptions and exceptions of Law of demand.	CO2	14 Marks
	(OR)		
2.	Define Elasticity of demand. Explain the different types of Elasticity of demand.	CO2	14 Marks

UNIT-II

3.	Define production function. Explain the managerial uses of production function.	CO1	14 Marks
	(OR)		
4.	Demonstrate various cost concepts. Explain the relationship between Fixed and Variable cost.	CO2	14 Marks

UNIT-III

5.	What is Monopoly competition? Explain price and output determination both in Short run and Long run in Monopoly competition.	CO3	14 Marks
	(OR)		
6.	Describe the various objectives of Pricing. Differentiate between Cost-plus pricing and Going rate pricing with suitable examples.	CO2	14 Marks

UNIT-IV

7.	Journalize the following transactions in the books of Mr. Srinivas Reddy. 2008 March.2 Srinivas Reddy started business with Rs.90,000/- March.3 Goods purchased worth Rs.2,000/- March.4 Cash deposited in to bank Rs.20,000/- March.8 Furniture purchased worth Rs. 6,000/- March.12 Sold goods worth Rs. 60,000/- March.15 Salaries paid Rs.6,000/- March.19 Rent paid Rs.1,100/- March.23 Cash withdraw from bank Rs.10,000/- March.25 Office expenses paid Rs.900/ March.29 Electricity charges paid Rs.700/-.	CO4	14 Marks
	(OR)		
8.	Explain the various Accounting Concepts and Conventions.	CO1	14 Marks

UNIT-V

9.	Define Manual accounting and Computerized accounting. Explain the difference between Manual accounting and Computerized accounting system**.**	CO2	14 Marks
	(OR)		

10. From the following Trial Balance of Balaram & Co, prepare Trading and Profit and Loss account for the year ended 31.3.2011 and a Balance Sheet as on that date. CO4 14 Marks

Particulars	Debit (Rs.)	Credit (Rs.)
Capital		55,000
Drawings	45,000	
Sales Returns	35,000	
Purchase Returns		25,000
Cash at bank	38,000	
Factory Rent	42,000	
Salaries	65,000	
Interest		2,500
Commission	15,000	12,000
Rent	75,000	
Bank loan		62,500
Insurance	1,800	
Furniture	75,000	
Sundry Debtors	85,000	
Cash in hand	18,000	
Opening Stock	53,000	
Sundry Creditors		43,000
Reserve for bad debts		2,000
Purchases	3,92,000	
Bills Payable		18,000
Bills Receivable	33,000	
Machinery	1,65,000	
Buildings	2,00,000	
Interest on Bank loan	1,200	
Trade Expenses	12,000	
Stationery	14,000	
Sales		6,50,000
TOTAL	**13,65,000**	**13,65,000**

Adjustments:

1. Closing Stock Rs.44,000/-
2. Outstanding Wages Rs.3,000/-
3. Prepaid Rent Rs.300/-
4. Depreciate Machinery by 10% and Furniture by 5%.
5. Write off bad debts Rs.3,000 and provide 4% reserve for doubtful debts.

CODE No.: 16BT5HS01 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

MANAGEMENT SCIENCE

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Define Management. Explain the contributions of F.W. Taylor and Henri Fayol to the management with examples. CO1 14 Marks

(OR)

2. a) What is corporate planning? Explain the elements of corporate planning process. CO2 7 Marks

   b) What do you mean by line and staff organisation structure? Write the benefits and limitations of line and staff organisation. CO3 7 Marks

UNIT-II

3. a) What is Plant Layout? Explain principles and types of plant layout. CO1 7 Marks

   b) Define inventory control. Briefly explain the types of inventory control. CO1 7 Marks

(OR)

4. a) Write short notes on: CO1 4 Marks

   i) Materials management. ii) Channels of Distribution.

   b) The data given below shows the details for the inspection of 10 consecutive batches: CO4 10 Marks

Batch No.	1	2	3	4	5	6	7	8	9	10
No. of pieces inspected	95	99	105	120	84	107	97	117	92	112
No. of defectives	16	6	9	10	11	5	13	14	10	13

Construct a chart showing the control and warning limits.

UNIT-III

5. a) Define Human Resource Management. Write it's functions. CO1 7 Marks

   b) Explain McGregor's theory X and theory Y with examples. CO1 7 Marks

(OR)

6. a) What is Motivation? Explain the importance of motivation in an Organisation. CO1 7 Marks

   b) Explain Maslow's hierarchy of human needs with recent examples. CO1 7 Marks

UNIT-IV

7. a) Explain the role of Entrepreneur in economic development. CO5 7 Marks

   b) Write corporate social responsibilities of Entrepreneur of your own choice. CO5 7 Marks

(OR)

8. The following table gives data on normal time & cost and crash time & cost for a project. CO4 14 Marks

Activity	Immediate Predecessor	Normal		Crash	
		Time (weeks)	Cost (Rs.000)	Time (weeks)	Cost (Rs.000)
A	-	10	20	7	30
B	-	8	15	6	20
C	B	5	10	4	14
D	B	6	11	4	15
E	B	8	9	5	15
F	E	5	5	4	8
G	A,D,C	12	3	8	4

Indirect cost is Rs.400 per day. Find the optimum duration and the associated minimum project cost.

UNIT-V

9. a) Explain the importance of TQM. CO1 7 Marks
   b) Write the role of information technology in management decision making. CO2 7 Marks

(OR)

10. a) What is supply chain management? Write the importance of supply chain management. CO1 7 Marks
    b) Briefly explain the concept of Six Sigma. CO1 7 Marks

CODE No.: 16BT6HS02 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

BUSINESS COMMUNICATION AND CAREER SKILLS

[Civil Engineering, Mechanical Engineering, Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		Explain the barriers of communication with examples. Outline the measures that make communication effective.	CO1	14 Marks
		(OR)		
2.	a)	Compare Formal and Informal networks.	CO2	7 Marks
	b)	How do you analyze interpersonal communication?	CO3	7 Marks

UNIT-II

3.		Analyze the significance of crisis communication for the organizations.	CO3	14 Marks
		(OR)		
4.	a)	Differentiate Community Relations and Media Relations in corporate communication.	CO2	7 Marks
	b)	Explain why corporate citizenship and social responsibility is required for organizations.	CO2	7 Marks

UNIT-III

5.		What are the strategies for writing the body of a letter?	CO4	14 Marks
		(OR)		
6.	a)	How should a business man give reply to a letter of complaint, when customer is right?	CO4	7 Marks
	b)	Enumerate various types of Business Messages.	CO4	7 Marks

UNIT-IV

7.		Outline the techniques that can make a presentation effective.	CO3	14 Marks
		(OR)		
8.	a)	What is a Resume? What information should it Provide?	CO4	7 Marks
	b)	Explain online recruitment process.	CO4	7 Marks

UNIT-V

9.		Discuss the role of Non-verbal aspects in an interview.	CO6	14 Marks
		(OR)		
10.	a)	Explain the steps for preparation of an interview.	CO5	7 Marks
	b)	What type of questions are needed for an interview?	CO5	7 Marks

CODE No.: 16BT6HS07 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

INDIAN CONSTITUTION

[Civil Engineering, Mechanical Engineering, Computer Science and Engineering, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I		
1.		Define the term 'Preamble' and explain its importance in the Constitution of India.	CO2	14 Marks
		(OR)		
2.		Explain the following terms:		
		i) Sovereign and Republic	CO1	7 Marks
		ii) Socialist and Secular	CO1	7 Marks
		UNIT-II		
3.		Describe the process for the election of the President of India from candidature to the assumption of office.	CO2	14 Marks
		(OR)		
4.	a)	Discuss the veto powers enjoyed by the President of India.	CO1	7 Marks
	b)	Explain the powers and functions of the Vice President of India.	CO1	7 Marks
		UNIT-III		
5.		Describe the Federal and Unitary features of the Indian Constitution.	CO2	14 Marks
		(OR)		
6.	a)	Discuss the financial and judicial powers of the Governor of a state.	CO1	7 Marks
	b)	Explain the conditions under which a member of the legislative assembly or legislative council of a state can be disqualified.	CO1	7 Marks
		UNIT-IV		
7.		Explain the provisions in the constitution to maintain the independence of the Supreme Court.	CO2	14 Marks
		(OR)		
8.	a)	Write about the powers and functions of the Election Commission.	CO1	7 Marks
	b)	Discuss about the composition and role of the Finance Commission.	CO1	7 Marks
		UNIT-V		
9.		Discuss the main principles of India's foreign policy.	CO2	14 Marks
		(OR)		
10.	a)	Write a note on the Commonwealth of Nations.	CO1	7 Marks
	b)	Write a note on India's Nuclear Doctrine.	CO1	7 Marks

CODE No.: 16BT6HS10 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

INDIAN HISTORY

[Civil Engineering, Mechanical Engineering, Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	Describe how archaeological and numismatic resources help in tracking history.	CO2	14 Marks

(OR)

2.	Distinguish epigraphy and archival research. State the methods used to identify these resources.	CO1	14 Marks

UNIT-II

3.	Describe the location and history of Harappa civilization.	CO1	14 Marks

(OR)

4.	What are the reasons for the downfall of Mauryan empire?	CO1	14 Marks

UNIT-III

5.	Detail the effects of the early intrusion of Islamic into Indian sub-continent.	CO1	14 Marks

(OR)

6.	Describe the rule of Moghul dynasty and Chola dynasty.	CO1	14 Marks

UNIT-IV

7.	Enlist the major reforms made by the British in India during colonial period.	CO1	14 Marks

(OR)

8.	Describe the role of Jhansi Lakshmi Bai in the first independence war.	CO1	14 Marks

UNIT-V

9.	What are the provisions made in Indian constitution after independence?	CO2	14 Marks

(OR)

10.	Describe the changing nature of work and organisation in India after independence.	CO2	14 Marks

CODE No.: 16BT6HS11 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

PERSONALITY DEVELOPMENT

[Civil Engineering, Mechanical Engineering, Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		Illustrate with examples, how self-confidence can be a strength or weakness.	CO2	14 Marks
		(OR)		
2.	a)	Explain the two characteristics- Consistency and Predictability.	CO1	7 Marks
	b)	List out four examples to explain the importance of soft-skills.	CO2	7 Marks

UNIT-II

3.		Positive and negative attitude –The effects on career. Explain with four examples.	CO2	14 Marks
		(OR)		
4.	a)	How attitudes develop? Give two examples.	CO2	7 Marks
	b)	How to improve attitude? Give three examples.	CO2	7 Marks

UNIT-III

5.		Responsibility and Accountability, Self -management and showing initiative-Explain these traits with illustration.	CO3	14 Marks
		(OR)		
6.	a)	Give two types of thinking strategies.	CO1	7 Marks
	b)	Four methods of stress management- explain.	CO1	7 Marks

UNIT-IV

7.		Dealing with superiors is a part of the job. Explain.	CO4	14 Marks
		(OR)		
8.	a)	Explain problem solving methods of 5W's.	CO4	7 Marks
	b)	Leadership skill is an important soft skill. Explain.	CO2	7 Marks

UNIT-V

9.		Soft-skills essential for career growth. State with examples.	CO2	14 Marks
		(OR)		
10.	a)	Teaching and interpersonal skills-Essential in career advancement.	CO3	7 Marks
	b)	Explain 5 social skills for workplace success.	CO1	7 Marks

CODE No.: 16BT30503 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

PYTHON PROGRAMMING
[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Explain about different type of data types in python. Illustrate those with suitable syntax and example.	CO1	7 Marks
	b)	Describe about the steps involved in developing computer algorithm for a given problem.	CO2	7 Marks
		(OR)		
2.	a)	Discuss briefly about the various types of operators in python.	CO1	7 Marks
	b)	Write a python script to find the factorial of a given number using both iterative and recursive techniques.	CO1	7 Marks

UNIT-II

3.	a)	Differentiate tuple and list comprehensions with suitable example.	CO1	7 Marks
	b)	Write a Python script to concatenate following dictionaries to create a new one. Sample Dictionary: dic1 = {1:10, 2:20} dic2 = {3:30, 4:40} dic3 = {5:50, 6:60} Expected Result : {1:10, 2:20, 3:30, 4:40, 5:50, 6:60}	CO4	7 Marks
		(OR)		
4.	a)	Explain in detail about; i) Creating a Set. ii) Accessing values in a Set. iii) Updating Set. iv) Deleting elements from Set.	CO1	7 Marks
	b)	List and explain the conditional and iterative statements in python with suitable syntax.	CO1	7 Marks

UNIT-III

5.	a)	Describe in detail about Exception with Arguments. Write a program to catch a Divide by zero exception. Add a finally block too.	CO1	7 Marks
	b)	Explain various String pattern matching functions in Python.	CO6	7 Marks
		(OR)		
6.	a)	Differentiate fruitful and void functions in python. Write a python script using function to fund the sum of first 'n' even numbers and print the result.	CO1	7 Marks
	b)	How to rename, copy, move and remove a file in python? Illustrate with a suitable example.	CO1	7 Marks

UNIT-IV

7.	a)	Draw star and hexagon shapes using Turtle and fill them with dynamic chosen periodically among blue, red and green colors.	CO1	7 Marks
	b)	Explain about the steps involved in plotting Fibonacci spiral fractal using Turtle in python.	CO1	7 Marks

(OR)

8.	a)	Explain the feature of polymorphism in Python with an example.	CO1	7 Marks
	b)	Write an Object-Oriented Python program to create two Time objects: current Time, which contains the current time; and bread Time, which contains the amount of time it takes for a bread maker to make bread. Then we'll use add Time to figure out when the bread will be done. Write the print Time function to display the time when the bread will be done by the bread maker.	CO1	7 Marks

UNIT-V

9.	a)	Explain steps to create widgets. Write Python program to display a label on clicking a push button.	CO1	7 Marks
	b)	Write Python GUI program to create two push buttons using Tkinter. Background color of a frame should be changed when different buttons are clicked.	CO1	7 Marks

(OR)

10.	a)	Explain about Check button and Entry widgets of GUI Tkinter with suitable syntax.	CO1	7 Marks
	b)	Illustrate the use of Lambda with an example.	CO1	7 Marks

CODE No.: 16BT40502 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

DATA BASE MANAGEMENT SYSTEMS
[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Define Database? Discuss about applications of a Database System.	CO1	7 Marks
	b)	What is Data Abstraction? Explain about different views of data.	CO1	7 Marks
		(OR)		
2.	a)	Draw the Architecture of Database.	CO1	7 Marks
	b)	Draw ER diagram for Ternary Relationship set with suitable example.	CO3	7 Marks

UNIT-II

3.	a)	Write about relational algebra. Discuss about different operators used in relational algebra.	CO2	7 Marks
	b)	What is meant by integrity constraint? Write about complex integrity constraints in SQL.	CO2	7 Marks
		(OR)		
4.	a)	How can we compare using null values? Explain about logical connectives with examples.	CO2	7 Marks
	b)	Differentiate the relational algebra and calculus.	CO2	7 Marks

UNIT-III

5.	a)	What is meant by multi valued dependency? Explain with example.	CO2	7 Marks
	b)	Write about problems related to decomposition.	CO2	7 Marks
		(OR)		
6.	a)	Explain about schema refinement in database design.	CO3	7 Marks
	b)	Define BCNF. How does BCNF differ from 3NF? Explain with example.	CO2	7 Marks

UNIT-IV

7.	a)	Explain two-phase locking protocol.	CO4	7 Marks
	b)	Distinguish serial schedule and serializable schedule. Give relevant examples.	CO4	7 Marks
		(OR)		
8.	a)	What is concurrency? Explain it in terms of locking mechanism and two-phase commit protocol.	CO4	7 Marks
	b)	Examine deadlock detection and timeouts.	CO4	7 Marks

UNIT-V

9.	a)	What is clustered index organization? Illustrate with an example.	CO5	7 Marks
	b)	Explain about B+ Trees Dynamic Indexing.	CO5	7 Marks
		(OR)		
10.	a)	Explain about Search and Insert in Tree Structured Indexing.	CO5	7 Marks
	b)	Design example for Composite Keys.	CO5	7 Marks

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CODE No.: 16BT50308 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

MECHATRONICS
[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I		
1.	a)	What is Mechatronics? Write about Mechatronics key elements.	CO1	7 Marks
	b)	Explain in detail Mechatronics measuring system.	CO1	7 Marks
		(OR)		
2.	a)	Compare and contrast the control system for the domestic central heating system involving a bimetallic thermostat and that involving a microprocessor.	CO1	7 Marks
	b)	Illustrate the basic elements of a microprocessor based engine management system.	CO1	7 Marks
		UNIT-II		
3.	a)	Explain, What are the different types of sensors? Explain in detail about selection of a sensor.	CO2, CO3	10 Marks
	b)	Illustrate the construction and working of an electrical relay.	CO2, CO3	4 Marks
		(OR)		
4.		Explain principle and working of following sensors i) Hall effect sensor. ii) Piezoelectric accelerometer.	CO2	14 Marks
		UNIT-III		
5.	a)	What is Signal Conditioning? Explain all basic elements and their functions in Signal Conditioning circuit.	CO3	7 Marks
	b)	What is an Operational Amplifier (Op-Amp)? Illustrate its working with a Circuit diagram.	CO3	7 Marks
		(OR)		
6.	a)	Define various elementary discrete time signals. Write short notes on them and explain about their properties.	CO3	6 Marks
	b)	Explain Digital to Analog Converters with a neat sketch.	CO3	8 Marks
		UNIT-IV		
7.		Describe and compare the characteristics of ; i) Proportional controller. ii) Integral controller. iii) Proportional+Integral controller.	CO4	14 Marks
		(OR)		
8.	a)	Explain the working of a PID controller with an aid of a neat circuit.	CO4	7 Marks
	b)	Write a critical note on continuous and discrete process controllers.	CO4	7 Marks
		UNIT-V		
9.		Design a Mechatronics system for an automatic camera and explain the various Mechatronics elements.	CO1	14 Marks
		(OR)		
10.		Explain the difference between Traditional and Mechatronics design with two examples.	CO6	14 Marks

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CODE No.: 16BT50403 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

VLSI DESIGN

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Draw and explain the nMOS fabrication process.	CO1	8 Marks
	b)	Write the Pull up to Pull down ratio for an inverter driven through another NMOS inverter.	CO2	6 Marks

(OR)

2.	a)	Using graphical approach explain the DC characteristics of a CMOS inverter. And explain differentiate between CMOS and Bipolar technologies.	CO2	8 Marks
	b)	Derive a first order expression relating the current and voltage (I-V) for an NMOS transistor in linear region. And explain any two non-ideal I-V effects in a MOS device.	CO1	6 Marks

UNIT-II

3.	a)	Derive an expression for the estimation of CMOS inverter delay.	CO1	6 Marks
	b)	Draw the schematic, stick diagram and layout for a CMOS NOR gate.	CO4	8 Marks

(OR)

4.	a)	Explain λ based design rules with neat diagram.	CO2	6 Marks
	b)	Derive the expression for sheet resistance Rs. And calculate the capacitance of the structure given below in figure.	CO4	8 Marks

UNIT-III

5.	a)	Explain in detail any One Adder Enhancement technique.	CO2	8 Marks
	b)	With a neat diagram, explain 4 x 4 barrel shifter.	CO3	6 Marks

(OR)

6.	a)	Explain the structure of Booth multiplier and list the advantages.	CO1	6 Marks
	b)	Explain the general arrangement of a 4-bit ALU.	CO3	8 Marks

UNIT-IV

7.	a)	Explain in detail the Generic Structure of an FPGA fabric.	CO1	7 Marks
	b)	Explain switch logic implementation of a 4 x 4 four way multiplexer.	CO3	7 Marks

(OR)

8.	a)	Explain 3-Transistor Dynamic RAM cell with Schematic and stick diagram.	CO2	7 Marks
	b)	Explain Pseudo nMOS logic for NAND gate and Inverter.	CO6	7 Marks

UNIT-V

9.	a)	List the system timing considerations. And explain any two fault models in combinational circuits.	CO1	8 Marks
	b)	Write a note on testability and testing.	CO4	6 Marks

(OR)

10.	a)	Demonstrate write operation and read operation for four transistor dynamic and six transistor static CMOS memory cell.	CO5	7 Marks
	b)	Explain Pseudo-Static RAM cell (CMOS) with schematic and stick diagram.	CO6	7 Marks

CODE No.: 16BT51203 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

WEB TECHNOLOGIES
[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Discuss the usage of Table in HTML. How to create them with and without borders?	CO1	8 Marks
	b)	Describe how **<frameset>** element is used in HTML with a suitable example.	CO1	6 Marks
		(OR)		
2.	a)	Elaborate the features of HTML5 and explain the structure of a HTML5 Document.	CO2	7 Marks
	b)	How are data attributes used? Discuss about custom data attributes.	CO1	7 Marks

UNIT-II

3.	a)	Describe various types of Cascading Style Sheets available for a web programmer with an example.	CO3	7 Marks
	b)	Define a function? Illustrate how parameters are passed to a function in JavaScript.	CO2	7 Marks
		(OR)		
4.	a)	Briefly explain implicit objects in Javascript with suitable examples.	CO5	6 Marks
	b)	Describe how mouse events are handled in Javascript.	CO5, CO2	8 Marks

UNIT-III

5.	a)	List and discuss the advantage and limitations of jQuery.	CO5	8 Marks
	b)	Differentiate between ID selector and Class selector in jQuery.	CO5	6 Marks
		(OR)		
6.		Develop a User Registration webpage using the grid system in bootstrap.	CO5	14 Marks

UNIT-IV

7.	a)	Describe various ways of creating Arrays in PHP.	CO5	8 Marks
	b)	Discuss how to Embed PHP code in a web page.	CO6	6 Marks
		(OR)		
8.	a)	Explain the concept of string interpolation in PHP.	CO4	7 Marks
	b)	Discuss various OOP principles in PHP.	CO6	7 Marks

UNIT-V

9.	a)	What is the difference between **==** and **===** operator in PHP? Explain with a suitable program.	CO6	6 Marks
	b)	What is difference between include, require, include_once and require_once ?	CO4	8 Marks
		(OR)		
10.	a)	What is for prepared statement? Explain in detail with a suitable program.	CO4	7 Marks
	b)	What are the advantages of cookies? How cookies and sessions are handled in PHP?	CO4	7 Marks

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CODE No.: 16BT51241 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

OBJECT ORIENTED PROGRAMMING
[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Evaluate a Java program to find a smallest number in the given array by creating one dimensional array and two dimensional arrays using new operator.	CO2	7 Marks
	b)	Define Arrays. What is array sorting and explain with an example?	CO1	7 Marks
		(OR)		
2.	a)	Interpret with an example what is method overloading and method overriding?	CO1	7 Marks
	b)	Write the techniques to design classes in Java using **javadoc**.	CO3	7 Marks

UNIT-II

3.	a)	Analyze and write a Java program using array list classes and objects for the following operations. i) PUSH; ii) POP.	CO3	7 Marks
	b)	Give a program for abstract class with an example.	CO2	7 Marks
		(OR)		
4.	a)	Illustrate String handling class in Java with example.	CO1	7 Marks
	b)	How is interface declared and implemented in Java. Give an example.	CO1	7 Marks

UNIT-III

5.	a)	Develop a Java program to implement user defined exception handling.	CO2	7 Marks
	b)	Identify a Java program to read characters from the console.	CO2	7 Marks
		(OR)		
6.		Generalize multithreading for a sample sequence of strings with a delay of 1000 milliseconds for displaying it using Java threads.	CO3	14 Marks

UNIT-IV

7.	a)	Differentiate between applet and application? What is secure applet?	CO4	7 Marks
	b)	Write an applet to calculate student grade.	CO3	7 Marks
		(OR)		
8.	a)	Explain about different layout managers with examples.	CO1	7 Marks
	b)	What is the advantage of layout managers? Why Java prefers layout managers instead of fixing the component by ***x*** and ***y*** coordinates? What are the different layout managers that AWT supports?	CO1	7 Marks

UNIT-V

9.	a)	Write a stand-alone AWT based application which creates a frame window that responds to mouse clicks and key strokes.	CO4	7 Marks
	b)	What is difference between ServletOuptputStream and PrintWriter?	CO1	7 Marks
		(OR)		
10.	a)	Write the procedure to Create and Compile the servlet source code.	CO1	7 Marks
	b)	What is difference between GenericServlet and HttpServlet?	CO1	7 Marks

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CODE No.: 16BT60101 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

FOUNDATION ENGINEERING
[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Define and specify the ratio requirements to get a good quality of undisturbed soil sample. CO1 7 Marks

   b) Determine the area ratios for the following soil samplers and comment on the nature of samples obtained in each of the samplers CO2 7 Marks

i) core cutter	160mm OD	150mm ID
ii) split Barrel	51mm OD	35mm ID
iii) seamless tube(Shelby)	51mm OD	48mm ID

(OR)

2. a) Write down the advantages and disadvantages of SPT over CPT. CO1 7 Marks

   b) The field N value in a deposit of fully submerged fine sand was 40 at a depth of 6m. The average saturated unit weight of the soil is 19kN/m^3. Calculate the corrected N value as per IS: 2131-1981. CO2 7 Marks

UNIT-II

3. a) What is earth pressure (K_0) at rest? When is it likely to develop behind a retaining wall? On what factors K_0 is dependant? CO1 6 Marks

   b) A retaining wall with a smooth vertical back has to retain a backfill of c-φ soil upto 5m above GL. The surface of backfill is horizontal and it has the properties: γ = 1.8 t/m^3, c = 1.5 t/m^2, $\varphi = 12^0$. CO2 8 Marks

   (i) Plot the distribution of active earth pressure on the wall.

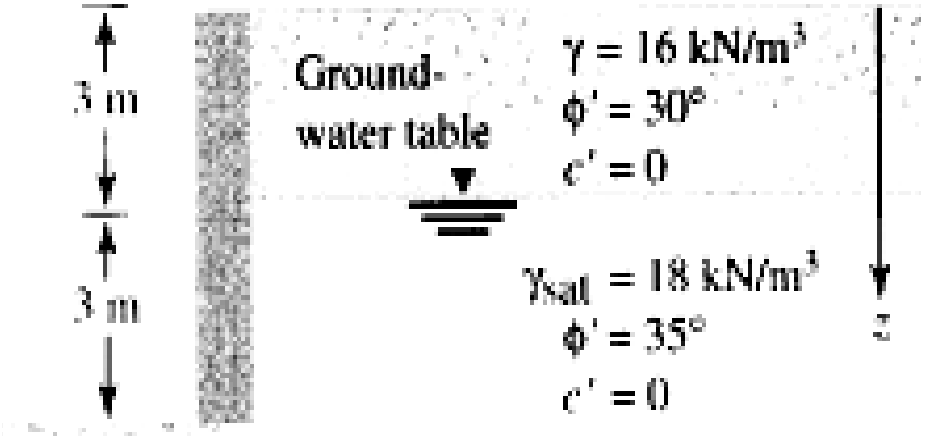
   (ii) Determine the magnitude and point of application of active thrust.

   (iii) Determine the depth of zone of tension cracks

(OR)

4. a) Explain the Culmann's graphical method. CO1 6 Marks

   b) For the retaining wall shown in figure, determine the force per unit width of the wall for Rankine's active state. Also find the location of the resultant. CO2 8 Marks



UNIT-III

5.	a)	Explain the Bishop's method of analysis for stability of slopes.	CO2	6 Marks
	b)	A cutting 8m deep is to be made in a saturated clay soil with $\gamma = 20$ kN/m^3, Cu = 20 kN/m^2 and $\varphi = 0^o$. A hard stratum exists at a depth of 12m below the ground level. Determine the angle of the slope at which failure would occur.	CO2	8 Marks

(OR)

6.	a)	Explain the methods to improve and protect the slopes.	CO1	7 Marks
	b)	An embankment is constructed at an angle of 60^0 to the horizontal. The cohesive strength of the embankment material is 40kN/m^2, angle of shearing resistance is zero and unit weight is 18kN/m^3. Calculate the safe height of the embankment for a factor of safety of 1.5. Assume the stability number as 0.91	CO2	7 Marks

UNIT-IV

7.	a)	What are the basic characteristics of the failure mechanism in general shear failure, punching shear failure and local shear failure?	CO1	6 Marks
	b)	A strip footing 2m wide carries a load intensity of400kN/m^2 at a depth of 1.2m in sand. The saturated unit weight of sand is 19.5kN/m^3 and unit weight above water table is 16.5kN/m^3. The shear strength parameters are C=0 and $\Phi = 35^0$. Determine the factor of safety with respect to shear failure for the following cases of location of water table. ($\Phi = 35^0$, Nq = 41.4, $N_\gamma = 42.4$ i) Water Table is at 2.5m below from the ground level. ii) Water Table is at 0.5m below from the ground level.	CO2	8 Marks

(OR)

8.	a)	Discuss the components of total settlements along with their determination.	CO1	6 Marks
	b)	Calculate the immediate settlement of a flexible footing 2.0m x 2.0m in clay loaded at 250kN/m^2 assuming E = 4500kN/m^2 and $\mu = 0.3$	CO2	8 Marks

UNIT-V

9.	a)	What are the different circumstances under which pile foundation is used?	CO2	7 Marks
	b)	A 12m long, 300mm diameter pile is driven in a uniform deposit of sand ($\Phi = 40^o$). The water table is at a great depth and is not likely to rise. The average dry unit weight of sand is 18kN/m^3. Using Nq = 137, calculate the safe load capacity of the pile with a factor of safety of 2.5.	CO3	7 Marks

(OR)

10.	a)	What is a Caisson? What are its types? What are the common types of well shapes?	CO1	7 Marks
	b)	Write short notes on: i) Sinking of well. ii) Forces acting on the well. iii) Grip length below the scour depth.	CO1	7 Marks

CODE No.: 16BT60102 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

HIGHWAY AND TRAFFIC ENGINEERING

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	What are the objectives of highway planning?	CO1	7 Marks
	b)	What are the factors affecting highway alignment?	CO1	7 Marks
		(OR)		
2.		Explain briefly about various Cross section elements of highway.	CO2	14 Marks

UNIT-II

3.	a)	Enumerate the procedures for any two aggregate tests in the laboratory.	CO5	7 Marks
	b)	Write the properties of bitumen.	CO2	7 Marks
		(OR)		
4.	a)	What are the factors influencing the design of a pavement as per IRC standards?	CO7	6 Marks
	b)	Determine the warping stresses at interior, edge and corner of a 25cm thick cement concrete pavement with transverse joints at 5.0m interval and longitudinal joints at 3.6m intervals. The modulus of subgrade reaction, K is 6.9kg/cm^3 and radius of loaded area is 15cm. Assume maximum temperature differential during day to be 0.6^{o}C per cm slab thickness and maximum temperature differential of 0.4^{o}C per cm slab thickness during night. e=10 x 10^{-6} per ^{o}C, E=3 x 10^5 kg/cm^2 and μ=0.15.	CO2	8 Marks

UNIT-III

5.	a)	Define Traffic Engineering. Explain the scope of Traffic Engineering.	CO1	7 Marks
	b)	Write briefly about skid resistance and braking efficiency.	CO2	7 Marks
		(OR)		
6.	a)	Explain the basic characteristics of traffic.	CO2	7 Marks
	b)	Graphically explain the relationships between density, volume and speed.	CO8	7 Marks

UNIT-IV

7.	a)	Describe the methods of conducting speed and delay studies.	CO5	7 Marks
	b)	Write the applications of origin destination studies.	CO1	7 Marks
		(OR)		
8.	a)	What is collision diagram? Explain with symbols.	CO8	7 Marks
	b)	Brief on parking lot, parking index and parking accumulation with illustrations.	CO2	7 Marks

UNIT-V

9.	a)	Write a short note on accident data recording.	CO4	7 Marks
	b)	Draw the sketches of various types of grade separated intersection. Write its advantages and disadvantages.	CO8	7 Marks
		(OR)		
10.	a)	Draw various Un-channelized intersections with traffic movements.	CO8	7 Marks
	b)	Explain types of traffic signal systems.	CO1	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

STEEL STRUCTURES
[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Compare the advantages of welded connection over bolted connection.	CO1	7 Marks
	b)	List the assumptions made in the design of bearing bolts as per codal provisions.	CO1	7 Marks

(OR)

2.		A tie member of a roof truss consists of 2ISA 100 x 75 x 8mm. The angles are connected to either side of a 10mm gusset plate and the member is subjected to a working pull of 300kN. Design the welded connection. Assume connections are made in the workshop.	CO3	14 Marks

UNIT-II

3.		Design a simply supported beam of span 8m carrying a RCC slab of lateral support at compression flange. The total UDL 30kN/m dead load and 70kN/m imposed load. The beam carries additional Point load 100kN at mid span. Assume stiff bearing length of support 120mm.	CO3	14 Marks

(OR)

4.	a)	How will torsion be there in beams? What is the difference in St.Venant torsion and Warping torsion?	CO2	7 Marks
	b)	Explain the step by step procedure for finding the load carrying capacity of a beam member.	CO2	7 Marks

UNIT-III

5.		A tension member of a roof truss carries a factored axial tension of 430kN. Design the section and its connection: i) without using Lug angle. ii) using Lug angle.	CO3	14 Marks

(OR)

6.		A strut consists of a double angle section ISA70 x 70 x 8mm and is 4.4m long. The member is connected to the gusset plate by 3, 20mm diameter ordinary bolts. Calculate the design compressive strength of the member. i) When the angels are placed on the opposite sides of 12mm thick gusset plate. ii) When the angels are placed on the same side of 12mm thick gusset plate.	CO3	14 Marks

UNIT-IV

7.		Design a built – up column with four angles laced together. The effective length of the column is 6.8m and it supports a factored load of 2300kN.	CO3	14 Marks

(OR)

8.		Design a gusset base for ISHB 300 column subjected to factored axial load 300kN and factored bending moment 50kN-m. Assume M25 grade concrete-Fe 410 steel gusset base foundation system.	CO7	14 Marks

UNIT-V

9.	Design the purlin of roof truss of factory building of span18m and pitch 1 in 5. The height of truss at eve level is 10m, spacing of truss 4.5m and the factory building is 36m long located at Delhi. (Assume design wind speed 43m/s). Design the purlin as a I-section.	CO3	14 Marks

(OR)

10.	A roof truss is to be prepared to construct near Hyderabad for the following data. Class of building = General with life of 50years Terrain category = 2 Size of building = 20m x 40m Height of the eve board = 11m Topography = $\theta \leq 3^0$ Permeability = Medium Span of truss = 15m Pitch = 1/4 Sheeting = AC Sheeting Spacing of purlins = 1.35m Determine the dead load, live load and wind loads on purlins.	CO2	14 Marks

CODE No.: 16BT60104 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

FIRE ENGINEERING
[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Discuss about theory of combustion and explosion.	CO1	6 Marks
	b)	Explain about vapour clouds and pool fires.	CO1	8 Marks
		(OR)		
2.		Write a short note on i) Shock waves and auto-ignition. ii) Boiling liquid expanding vapour explosion.	CO1	14 Marks

UNIT-II

3.	a)	Explain various types of fire extinguishers.	CO1	7 Marks
	b)	Discuss about the maintenance of fire trucks.	CO1	7 Marks
		(OR)		
4.		Describe about escape from fire rescue operation.	CO2	14 Marks

UNIT-III

5.	a)	Explain about hydrant pipes and hoses.	CO3	6 Marks
	b)	Describe flammable liquids and tank farms.	CO3	8 Marks
		(OR)		
6.		Discuss about special fire suspension systems.	CO5	14 Marks

UNIT-IV

7.	a)	Describe the design of building elements to passive fire protection.	CO1	6 Marks
	b)	Write a note on fire certificates and snookers.	CO2	8 Marks
		(OR)		
8.		Explain various fire safety requirements for high rise buildings.	CO9	14 Marks

UNIT-V

9.	a)	Explain about flame arrestors and venting.	CO1	6 Marks
	b)	Describe briefly about suppression system based on carbon dioxide and halons-hazard in LPG.	CO7	8 Marks
		(OR)		
10.		Discuss about explosion parameters and explosion protection in residential and industrial buildings.	CO10	14 Marks

CODE No.: 16BT60109 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

GROUND WATER DEVELOPMENT AND MANAGEMENT
[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Explain briefly how the water is stored in the ground water reservoir, mentioning various zone and significance of the 'Zone of Saturation'.	CO1	7 Marks
	b)	What is Darcy's law? Explain the use of this law in the present day theoretical solutions to the problem of ground water movement.	CO1	7 Marks

(OR)

2.	a)	Briefly explain various types of aquifers.	CO2	8 Marks
	b)	In an area of 100ha., the water table dropped by 4.5m. If the porosity is 30% and the specific retention is 10%, determine: i) the specific yield of the aquifer. ii) change in ground water storage.	CO2	6 Marks

UNIT-II

3.	a)	Discuss briefly the methods which are used for determining the yield of open wells.	CO2	7 Marks
	b)	In an artesian aquifer, the drawdown is 1.2m at a radial distance of 10m from a well after 2 hrs of pumping. On the basis of Theis non-equilibrium equation, determine the pumping time for the same drawdown at a radial distance of 30m from the well.	CO2	7 Marks

(OR)

4.	a)	Distinguish between non-equilibrium and equilibrium conditions in an aquifer from which water is withdrawn through a well.	CO2	7 Marks
	b)	Derive an express for steady radial flow into a well under unconfined aquifer.	CO2	7 Marks

UNIT-III

5.	a)	Explain the reasons for sea water intrusion. How do you locate fresh water-sea water interface?	CO4	7 Marks
	b)	A well screen 1m in length is located 15m below the ground water table in an unconfined aquifer having a permeability of 20m/day. The fresh water-sea water interface exists at a depth of 36m below the water table. What is the maximum discharge that can be sustained from the well without causing the sea water to intrude into the well.	CO3	7 Marks

(OR)

6.		Discuss the effects of sea water intrusion and explain various methods to control sea-water intrusion.	CO4	14 Marks

UNIT-IV

7.	a)	Enumerate various methods of artificial recharge of ground water and discuss their relative merits.	CO3	7 Marks
	b)	What do you mean by conjunctive use of ground water? Discuss the advantages and disadvantages of conjunctive use of ground water.	CO3	7 Marks

(OR)

8.	a)	Discuss the application of GIS and RS in artificial recharge of ground water.	CO5	7 Marks
	b)	Explain the procedure for the management of a ground water basin.	CO5	7 Marks

UNIT-V

9.		Explain Electrical resistivity and Seismic refraction methods of ground water exploration in detail.	CO2	14 Marks

(OR)

10.		Explain the various steps involved in field survey using electrical resistivity methods.	CO2	14 Marks

CODE No.: 16BT60110 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

SOLID WASTE MANAGEMENT

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Highlight on rules and regulations of hazardous waste in India. CO8 7 Marks

   b) Estimate the moisture content of a solid waste sample with the following composition based on 100kg sample. CO2 7 Marks

Component	Percent by weight	Moisture content
Food waste	20	70
Paper	40	6
Card board	9	5
Plastics	11	2
Garden trimmings	10	60
Wood	5	18
Tin cans	5	2
Total	100	

(OR)

2. Investigate the importance of public awareness and role of NGOs in effective solid waste management. CO4 14 Marks

UNIT-II

3. Discuss on-site processing of solid wastes in medium and high rise buildings. CO1 14 Marks

(OR)

4. Describe the types of storage methods and materials used for the storage container. CO5 14 Marks

UNIT-III

5. Describe the operation of hauled container system and stationary container system of waste collection. CO9 14 Marks

(OR)

6. Explain the factors to be considered in deciding collection frequency in a solid waste management system to achieve the environment sustainability. CO7 14 Marks

UNIT-IV

7. Distinguish between incineration and pyrolysis. As a solid waste management expert, which method do you prefer for organic wastes? CO5 14 Marks

(OR)

8. a) What are the merits and demerits of composting? Distinguish between Indore and Bangalore methods of composting. CO5 7 Marks

   b) List the components of combustible and non-combustible in municipal solid waste and explain. CO1 7 Marks

UNIT-V

9. Explain design and operation of sanitary landfill. CO9 14 Marks

(OR)

10. What is leachate? How it is formed? State the characteristics of leachate. Explain any one method of collection system of landfill gases. CO9 14 Marks

CODE No.: 16BT60112 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

BUILDING MAINTENANCE AND REPAIR

[Civil Engineering, Mechanical Engineering, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I		
1.	a)	Explain in detail the effect of environmental elements such as heat, dampness, frost and precipitation on buildings.	CO1	7 Marks
	b)	Explain in detail the effect of pollution on buildings and effect of fire on buildings.	CO2	7 Marks
		(OR)		
2.	a)	Explain in detail the assessment procedure for evaluating of damaged structures.	CO5	8 Marks
	b)	Explain in detail the causes of deterioration.	CO2	6 Marks
		UNIT-II		
3.	a)	Explain briefly about types building failures and methodology for investigation.	CO1	7 Marks
	b)	Explain in detail the repair of cracks in concrete and masonry.	CO1	7 Marks
		(OR)		
4.	a)	Explain in detail the repair and strengthening of concrete buildings.	CO1	7 Marks
	b)	Explain in detail the leakage of roofs and repair methods.	CO3	7 Marks
		UNIT-III		
5.	a)	Explain in detail the rust eliminators and polymers coating for rebars during repair.	CO1	7 Marks
	b)	Write short notes on: i) Foamed concrete. ii) Mortar and dry pack.	CO1	7 Marks
		(OR)		
6.		Write short notes on: i) Gunite and shotcrete. ii) Epoxy injection. iii) Mortar repairs for cracks. iv) Shoring and underpinning.	CO4	14 Marks
		UNIT-IV		
7.		Explain in detail for the following: i) Routine maintenance of building. ii) Maintenance cost.	CO8	14 Marks
		(OR)		
8.	a)	Explain in detail the construction details for prevention of dampness.	CO1	7 Marks
	b)	Write short notes on: i) Fire protection. ii) Corrosion protection.	CO1	7 Marks
		UNIT-V		
9.	a)	Explain in detail the performance of construction materials and components in service.	CO1	7 Marks
	b)	Describe the rehabilitation of constructed facilities.	CO7	7 Marks
		(OR)		
10.		Explain in detail the recycling of old buildings and its advantages.	CO6	14 Marks

CODE No.: 16BT60115 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

ENVIRONMENTAL POLLUTION AND CONTROL

[Civil Engineering, Mechanical Engineering, Computer Science and Engineering, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		What are air pollutants and how the air pollutants effects on man, material and vegetation? Explain.	CO1	14 Marks
		(OR)		
2.	a)	Analyze the behavior of plumes under different lapse rates.	CO2	7 Marks
	b)	Explain briefly the global effects due to air pollution.	CO1	7 Marks

UNIT-II

3.		List the various methods for separation of particulate matter from effluent gases. Explain filtration in detail.	CO3	14 Marks
		(OR)		
4.		Discuss with details the following with reference to air pollution. i) Settling chambers. ii) Centrifugal separators.	CO3	14 Marks

UNIT-III

5.	a)	Discuss about sources, causes and effects of water pollution.	CO1	7 Marks
	b)	Explain briefly about the water purification processes.	CO4	7 Marks
		(OR)		
6.		Enumerate and explain different sources, causes and effects with respect to water pollution.	CO5	14 Marks

UNIT-IV

7.		Discuss about land pollution due to industrial effluent with examples.	CO1	14 Marks
		(OR)		
8.		Explain with details regarding effective measures to control soil pollution.	CO6	14 Marks

UNIT-V

9.		Discuss about the sources of solid waste and its adverse health aspects.	CO1	14 Marks
		(OR)		
10.		Discuss with details about the composition, collection and transportation of solid waste.	CO1	14 Marks

CODE No.: 16BT60117 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

PROFESSIONAL ETHICS

[Civil Engineering, Mechanical Engineering, Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Explain the levels of moral development suggested by Kohlberg.	CO2	7 Marks
	b)	Discuss the scope and aims of engineering Ethics.	CO1	7 Marks
		(OR)		
2.	a)	Give an account of consensus and controversy.	CO2	7 Marks
	b)	Explain Gilligan's argument.	CO2	7 Marks

UNIT-II

3.	a)	What is the role of ethics in professional responsibilities?	CO1	7 Marks
	b)	Discuss medicine, law and engineering as professions.	CO1	7 Marks
		(OR)		
4.	a)	Write a short note on: i) Customs and religion.; ii) Sense of responsibility.	CO1	7 Marks
	b)	Write a short note on: i) Ethical relativism. ii) Religion and Divine command ethics.	CO1	7 Marks

UNIT-III

5.	a)	What are the functions of code of ethics?	CO6	7 Marks
	b)	Compare and contrast engineering experiments with standard experiments.	CO4	7 Marks
		(OR)		
6.	a)	'Engineering and medical experimentation is not to be done without voluntary and informed consent'- justify.	CO9	7 Marks
	b)	'Any major disaster that happened is due to the lapses of the experimenters'- Justify with an example.	CO9	7 Marks

UNIT-IV

7.	a)	A person who is loyal has respect for authority. Discuss.	CO7	7 Marks
	b)	Write about: i) Whistle blowing. ii) The salient features of professional and employee rights.	CO7	7 Marks
		(OR)		
8.	a)	What is the importance loyalty and collegiality in team work?	CO7	7 Marks
	b)	Write a short note on: i) What is reverse discrimination? ii) How are conflicts of interest solved?	CO7	7 Marks

UNIT-V

9.		What are professional ethics? How are they different from personal ethics?	CO8	14 Marks
		(OR)		
10.	a)	How managerial ethics applied to Engineering profession.	CO8	7 Marks
	b)	Explain the salient features of Environmental ethics.	CO8	7 Marks

CODE No.: 16BT60118 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

RURAL TECHNOLOGY

[Civil Engineering, Mechanical Engineering, Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Rama wants to grow cotton in his crop field through traditional method in Hosoor village. What is the process involved from sowing seeds to storage?	CO1	7 Marks
	b)	Explain about role of science and technology in rural development.	CO1	7 Marks
		(OR)		
2.	a)	Thandrapadu is one of the backward village in Kurnool district with lack of infrastructure facilities. Choose the technology that can improve the rural infrastructure.	CO4	7 Marks
	b)	Explain importance of rural technology and poverty eradication.	CO2	7 Marks

UNIT-II

3.	a)	Day by day waste generation is increasing more and to minimize this waste 3R principle use is necessary. What is meant by 3R principle? State the advantages of 3R principle.	CO4	7 Marks
	b)	Explain in detail about different types of alternative sources of energy.	CO1	7 Marks
		(OR)		
4.	a)	The increase of wood waste and animal waste is more in the village Ramapuram which is near to the forest area. Show how the waste can use by the rural people with the technology for cooking.	CO4	7 Marks
	b)	Briefly explain the assessment and production of biomass products and their utilization.	CO2	7 Marks

UNIT-III

5.	a)	Define tissue culture. Explain briefly how the production of one of the ornamental plant orchids can be increased by the plant tissue culture.	CO4	7 Marks
	b)	Explain the building materials used in the rural areas.	CO2	7 Marks
		(OR)		
6.		The government of India is giving training to the rural women how is unemployed. Discus the detail the rural of cottage industries in rural development.	CO1	14 Marks

UNIT-IV

7.	a)	Raghunath is an agricultural scientist wants to give awareness to the rural people about the usage of organic fertilizers in the crop field. Suggest the importance uses of bio fertilizer.	CO6	7 Marks
	b)	Explain methodologies used for water conservation in rural development.	CO1	7 Marks
		(OR)		

8.	a)	Write the importance of medical and aromatic plants and explains their need in community development.	CO5	7 Marks
	b)	Explain the importance of environment and sanitation in community development.	CO4	7 Marks

UNIT-V

9.	a)	What is meant by CSR? How development can be achieved with the involvement of private sector participation in the rural area?	CO3	7 Marks
	b)	Write short note on village adoption schemes in India.	CO2	7 Marks

(OR)

10.		Information technology for the rural development is a boon or bane and applies its principle for a specific purpose.	CO2	14 Marks

CODE No.: 16BT60201 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

POWER SEMICONDUCTOR DRIVES
[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Explain the different components of basic electrical drive system.	CO1	7 Marks
	b)	Derive the fundamental torque equation of the motor-load system. What is meant by deceleration mode of the electric drive?	CO2	7 Marks

(OR)

2.	a)	Define braking. Describe the various types of braking with neat diagram.	CO2	7 Marks
	b)	Draw and explain the operation of closed loop control of drives with inner current loop and field weakening.	CO1	7 Marks

UNIT-II

3.		Sketch the appropriate voltage and current waveforms of the working of single phase full converter fed **dc** drive for firing angles α=30º and α=120º.	CO2	14 Marks

(OR)

4.	a)	Explain the operation of a separately excited **dc** motor supplied from 3-phase fully controlled rectifier with necessary waveforms. Assume continuous conduction.	CO3	7 Marks
	b)	Draw and explain the speed–torque characteristics of a **dc** separately excited motor fed by single phase full converter with relevant equations.	CO2	7 Marks

UNIT-III

5.	a)	Explain the operation of a four quadrant chopper fed to the **dc** separately excited motor and also draw the current and voltage wave forms for continuous current operation.	CO2	6 Marks
	b)	Briefly explain the chopper control performance fed with separately excited **dc** motor in motoring control mode with neat diagrams.	CO4	8 Marks

(OR)

6.	a)	Deduce the expressions for average motor currents I_{max} and I_{min} for first quadrant chopper fed separately excited **dc** motor.	CO2	7 Marks
	b)	Draw the block diagram and explain the closed loop model of separately excited **dc** motor.	CO4	7 Marks

UNIT-IV

7.	a)	Briefly explain the stator voltage control of induction motor by **ac** voltage controller.	CO1	7 Marks
	b)	Explain closed loop operation of VSI fed induction motor drives with a neat diagram.	CO4	7 Marks

(OR)

8.	a)	Draw and explain the operation of rotor-resistance control of Induction motor. Mention the advantages and disadvantages of this method of control in real time applications.	CO5	6 Marks
	b)	Explain Static Kramer drive for a three phase induction motor. Why it has a low range of speed control?	CO1	8 Marks

UNIT-V

9.	a)	Discuss in detail with suitable circuit diagram, the principle of operation of self controlled synchronous motor drive employing load commutated thyristor inverter.	CO6	7 Marks
	b)	Explain the operation of self controlled synchronous motor fed by current source inverter with a neat diagram.	CO5	7 Marks

(OR)

10.	a)	Draw and explain the speed-torque curves of a synchronous motor with variable frequency control of synchronous motor.	CO2	7 Marks
	b)	Briefly explain the operation of stepper motor drive and the torque *Vs* stepping rate characteristics.	CO1	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

POWER SYSTEM ANALYSIS

[Electrical and Electronics Engineering]

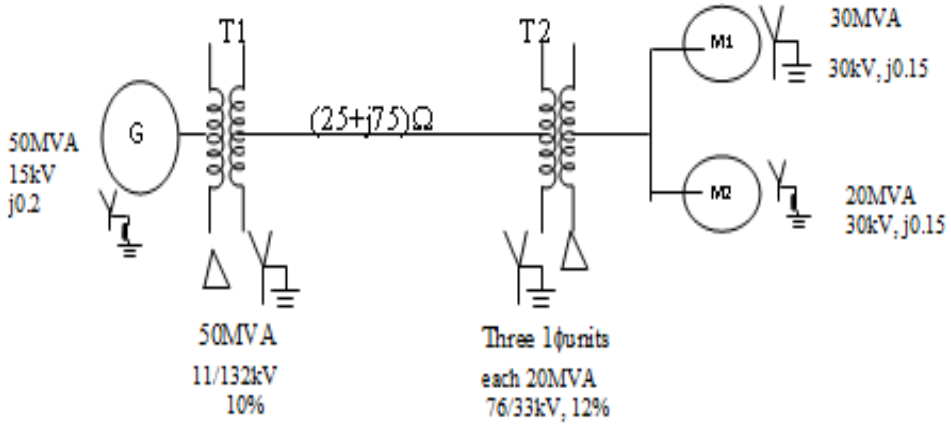
Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

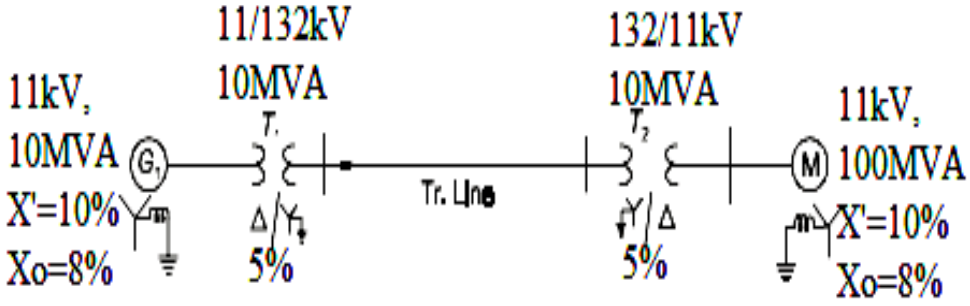
1. a) Prove that: $Z_{pu(new)} = Z_{pu(old)} X \frac{MVA_{BASE(new)}}{MVA_{BASE(old)}} X \frac{(KV)^2_{BASE(old)}}{(KV)^2_{BASE(new)}}$. CO1 7 Marks

b) A 50MVA, 15kV three phase generator has a sub-transient reactance of 0.2pu. The generator supplies two motors over a transmission line having transformers at both ends as shown in one line diagram. The motors have rated inputs of 30MVA and 20MVA both 30kV with 0.15pu sub transient reactance. Rating of the sending end transformer T1 is 50MVA, 11Δ-132Y kV with 10% leakage reactance. Transformer T2 at the receiving end has three single phase transformers connected as three phase unit. Rating of each individual transformer is 20MVA, 33/76kV with 12% leakage reactance. Series impedance of the line is (25+j75)Ω. Draw the impedance diagram with all impedances marked in per unit. Select generator rating as base in generator circuit. CO3 7 Marks



(OR)

2. Draw the Zero sequence network for the figure shown below. Zero sequence reactance for generator and motor are 0.06pu. Current limiting reactors connected in generator and motor are 2Ω. Transmission line zero sequence impedance is 300Ω. CO1 14 Marks



UNIT-II

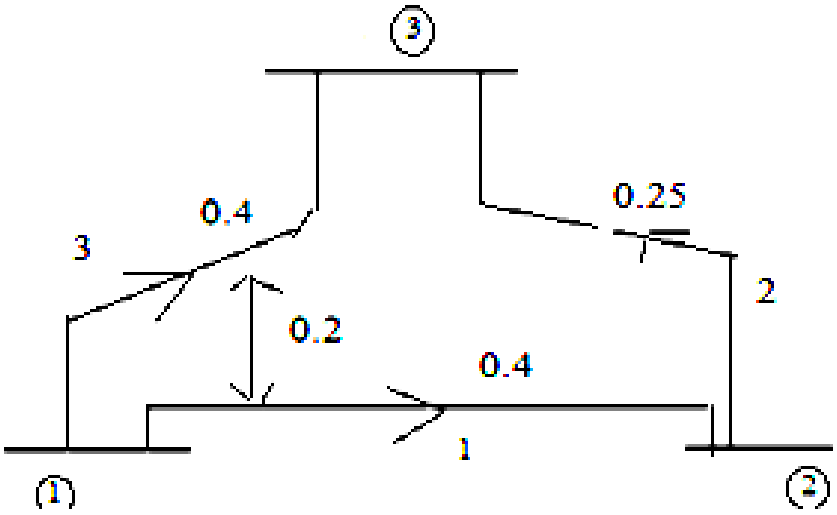
3. a) Starting from the first principles, show that a diagonal element of Y_{BUS} equal to the sum of admittances connected to that bus and an off diagonal element equal to the negative of the admittance directly connected between the buses. CO1 7 Marks

b) Obtain bus admittance matrix of the power system network with the following data, using direct inspection technique. All the component values are given in P.U. CO1 7 Marks

Bus Code	Impedance	Line charging Admittance
1 – 2	0.08 + *j*0.24	0.0
1 – 3	0.02 + *j*0.06	0.0
2 – 3	0.06 + *j*0.18	0.0

(OR)

4. For the network shown in figure, form Z_{BUS} using step by step algorithm. CO1 14 Marks



UNIT-III

5. For the power system network, the generators are connected at all four buses, while loads are at buses 2, 3 and 4. The values of real and reactive powers are listed in table 1. All buses other than slack bus are of P-Q type. Line data are given in table 2. Assuming a flat voltage start, determine the voltage magnitudes and the phase angles at the three buses using G- S (Gauss-Seidel) method for first iteration. CO4 14 Marks

Table 1. Input data

Bus	**Pi**	**Qi**	**Vt**	**Type of Bus**
1	--	--	1.05∟0	Slack
2	–0.45	–0.15	--	PQ
3	–0.51	–0.25	--	PQ
4	–0.6	–0.3	--	PQ

Table 2.Line data

Line No.	Bus Code (p – q)	Line Impedance
1	1 – 2	0.08 + *j*0.2
2	1 – 4	0.05 + *j*0.1
3	2 – 3	0.04 + *j*0.12
4	3 – 4	0.04 + *j*0.14

(OR)

6.		Discuss Newton-Raphson method of polar co-ordinates using appropriate mathematical equations.	CO2	14 Marks

UNIT-IV

7.	a)	List out various faults in power system. Discuss their severity and frequency of occurrence.	CO1	6 Marks
	b)	Derive the expressions for sequence currents for a LL-G fault at the terminals of an unloaded solidly grounded generator. Draw the interconnection diagram of sequence networks.	CO2	8 Marks

(OR)

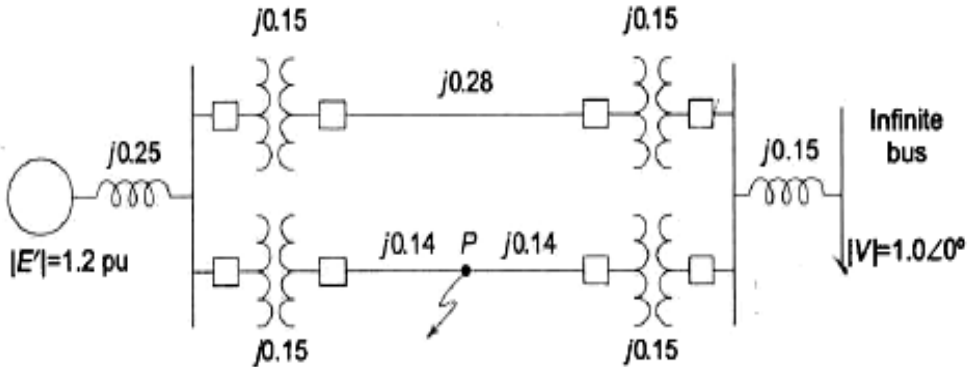
8.	a)	Derive the expressions for sequence currents for L-G fault at the terminals of an unloaded solidly grounded generator. Draw the interconnection diagram of sequence networks.	CO2	7 Marks
	b)	Explain interconnection of sequence networks for L-L fault in power system network with necessary equations.	CO2	7 Marks

UNIT-V

9.	a)	Explain the concept of equal area criterion.	CO1	4 Marks
	b)	Find the steady state power limit of a system consisting of a generator equivalent reactance 0.5pu connected to an infinite bus through a series reactance of 1.0pu. The terminal voltage of the generator is held at 1.2pu and the voltage of the infinite bus is 1.0pu.	CO4	10 Marks

(OR)

10.		Find the critical clearing angle for the system shown in following figure for a 3-phase fault at the point P. The generator is delivering 1.0pu power under pre fault conditions.	CO5	14 Marks



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

DESIGN AND ESTIMATION OF ELECTRICAL SYSTEMS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Draw the wiring layout for a big office building. CO3 7 Marks
   b) List out the general rules to be followed for internal wiring. CO1 7 Marks

(OR)

2. Estimate the quantity of material required and the cost of material for wiring a newly constructed residential building whose plan is shown figure below and the details of load are given in table below. Assume any missing data. CO2 14 Marks

Location	Lamp (60W)	Tube light (40W)	Fan (80W)	5A socket outlet	15 A socket outlet
Verandah	1	1	1	------	------
Reading Room	1	1	1	1	1
Bed Room-1	1	1	1	1	-----
Bed Room-2	1	1	1	1	-------
Kitchen	1	1	----	1	1

UNIT-II

3. a) A 11kv line is to be erected to give supply to village 2km from existing 11kv line. Prepare a schedule of materials required for the line. Assume an average span of 50m and 2 cut points in line. CO1 7 Marks
   b) List out the main components of an over Head Transmission lines. CO3 7 Marks

(OR)

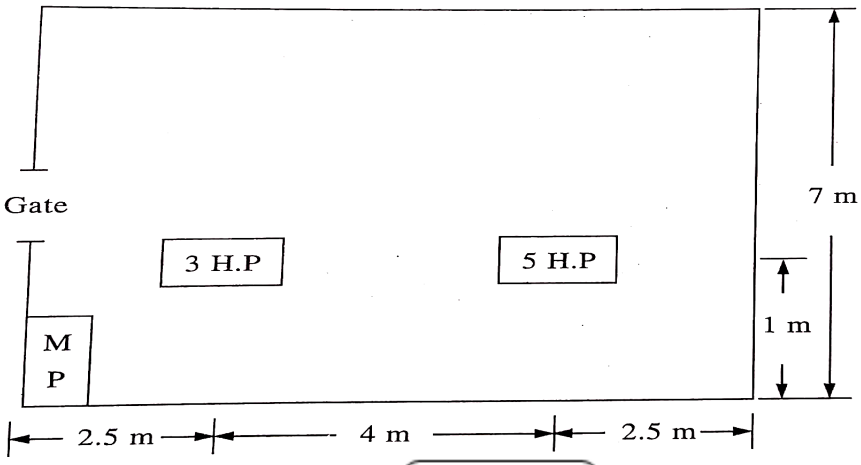
4. a) Estimate the material required for erection of three phase 5-wire distribution line of the length 2km and assume the span between the two poles is 60m over 8m long PSCC poles. CO1 7 Marks
   b) Calculate the number of various insulators needed for the erection of 500m, 3-phase, 11kV overhead line with two angled points and two turning points. The length of span is 70m. CO3 7 Marks

UNIT-III

5. a) What are the advantages of Electric drives? CO3 7 Marks
   b) State some important points that guides in carrying out wiring for a motor installation. CO1 7 Marks

(OR)

6. Two 3-phase, 400V induction motors are installed in a work shop of plan shown in figure below. Make a neat single sketch of power wiring of machines. Also prepare the list of materials required and their coast for the power wiring installation. The efficiency of motors is 85% and power factor are 0.8 lag. Assume missing data if any. CO3 14 Marks



UNIT-IV

7.	a)	State and explain laws of illumination.	CO1	7 Marks
	b)	Describe the construction and working of a filament lamp. Compare it with fluorescent lamp.	CO5	7 Marks
		(OR)		
8.	a)	What are requirements of good lighting? Explain in detail	CO1	7 Marks
	b)	Write a short notes on factory lighting, street lighting, flood lighting	CO5	7 Marks

UNIT-V

9.	a)	Discuss advantages of electric heating as compared to other heating method. Also state the desirable properties of a heating element.	CO5. CO6	7 Marks
	b)	With simple sketches, describe the working of a coreless-type induction furnace	CO5	7 Marks
		(OR)		
10.	a)	What is dielectric heating? Explain the factors on which the dielectric loss in a dielectric material depends.	CO1	7 Marks
	b)	Describe briefly the various types of arc welding process used in industry	CO1	7 Marks

CODE No.: 16BT60204 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

DIGITAL SIGNAL PROCESSING FOR ELECTRICAL ENGINEERS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	If $x(n) = \{1,3,\underset{\uparrow}{4},-2,-5\}$ then find $x(n-3)$, $x(2n)$ and $x(n/2)$.	CO1	6 Marks
	b)	Given an LTI discrete-time system described by the difference equation $y(n) - 0.5\,y(n-1) = x(n) + 0.5\,x(n-1)$ where $y(-1) = 2$ and $x(n) = (0.5)^n u(n)$, and also the unit impulse response.	CO1	8 Marks
		(OR)		
2.	a)	Determine the z-transform of $x(n) = \left(\frac{1}{2}\right)^n u(n) + 2^n u(n)$ and depict the ROC and location of poles and zeros in the z-plane.	CO1	8 Marks
	b)	Draw the block diagram of DSP and also explain the significance of each block.	CO1	6 Marks

UNIT-II

3.	a)	Find the four point DFT of the sequence $x(n) = \cos \pi n$, $0 \le n \le 3$.	CO2, CO4	4 Marks
	b)	State and prove the circular timing shifting and conjugate symmetry properties of DFT.	CO2, CO4	10 Marks
		(OR)		
4.	a)	Draw the butterfly diagram of 16-point DFT using DIF FFT algorithm.	CO2, CO4	8 Marks
	b)	Find the linear and circular convolutions of $x(n) = \{1,3,\underset{\uparrow}{-3},-2,-5\}$ and $h(n) = \{1,\underset{\uparrow}{2},-2,-5\}$	CO4	6 Marks

UNIT-III

5.	a)	Obtain direct form-II realization of the LTI system governed by the difference equation $y(n) = 1.5y(n-1) - 0.6\,y(n-2) - 0.25y(n-3) + x(n) + x(n-2)$.	CO3	8 Marks
	b)	List the advantages of digital filters.	CO1	6 Marks
		(OR)		
6.	a)	Design a digital Chebyshev filter to satisfy the constraint $0.707 \le \lvert H(e^{j\omega}) \rvert \le 1,\ 0 \le \lvert\omega\rvert \le 0.2\pi$ $\lvert H(e^{j\omega}) \rvert \le 0.1,\ 0.5\pi \le \lvert\omega\rvert \le \pi$ use bilinear transformation and assume T=1sec.	CO3	10 Marks
	b)	Compare Butterworth and Chebyshev filters.	CO3	4 Marks

UNIT-IV

7.		Design an ideal Hilbert transformer having frequency response using Blackman window for N=11 and also plot the frequency response. $H(e^{j\omega}) = j, \quad -\pi \le \omega \le 0$ $= j, \quad 0 \le \omega \le \pi$	CO3	14 Marks

(OR)

8.		Design an ideal FIR LPF of length N=11 with cutoff frequency of 1KHz and sampling frequency of 4KHz using Fourier series method. Find the non causal FIR filter impulse response and system function. Moreover find the causal FIR filters system function and frequency response.	CO3	14 Marks

UNIT-V

9.	a)	How the memory is allocated in LF2407 DSP controller? Also give the types of physical memory.	CO5	8 Marks
	b)	List out the salient features of LF2407 processors.	CO5	6 Marks

(OR)

10.		Develop an algorithm for controlling the output voltage to a predetermined value for DC-DC buck boost converter by interfacing with LF2407 with neat diagram.	CO5, CO6	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

ELECTRICAL MACHINE DESIGN

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Explain the principles of design of electrical machines. What are the limitations in the design?	CO1	7 Marks
	b)	What are the desirable properties of magnetic materials? Explain in brief the magnetic materials. Explain in brief the characteristics and applications of sheet steels.	CO4	7 Marks

(OR)

2.	a)	What are the desirable properties of insulating materials? Explain the classification of insulating materials based on thermal consideration with two examples in each class.	CO5	7 Marks
	b)	Explain clearly the factors which impose limitations in the design / choice of Specific electrical and magnetic loadings.	CO3	7 Marks

UNIT-II

3.	a)	Discuss the choice of number of poles used in a DC machine	CO1	7 Marks
	b)	Calculate the main dimensions of a 20H.P. 1000 r.p.m, 400V DC motor. Average value of flux density = 0.37tesla, specific electric loading = 16,000AC/metre. Efficiency 90%. Choose a suitable pole number and justify the selection.	CO2	7 Marks

(OR)

4.	a)	A 500 kW, 460V, 8 pole, 375 r.p.m DC compound generator has an armature diameter of 1.1m and a core length of 0.33m. The ampere conductors per meter is 34000. The internal voltage drop is 4% of terminal voltage. The field current is 1% of output current. The ratio of pole arc to pole pitch is 0.7. The voltage between adjacent commutator segments at no load should not exceed 15V and the slot loading should not exceed 1500A. The diameter of commutator is 0.65 of armature diameter and the minimum allowable pitch of commutator segment is 4mm. Suggest suitable type of armature winding. Find the number of slots, number of coils, number of commutator segments, number of conductors per slot and the number of turns per coil in the winding.	CO5	9 Marks
	b)	A 8 pole, 500V DC shunt generator, with all the field coils connected in series, requires a mmf of 5000AT/pole. The poles are of rectangular dimensions 120 x 200mm² and available winding area is 120 x 25mm². Determine: i) the area of cross section of the wire. ii) number of turns. iii) mmf supplied by the field. A conductor of round cross section is used. Resistivity is 0.02Ω-mm²/mt and the insulation of the wire increases the diameter by 0.2mm. Allow a voltage drop of 50 volts in the field regulator.	CO4	5 Marks

UNIT-III

5. a) Derive the output equation of power and voltage of a 3 phase core type transformer. CO1 7 Marks

   b) Calculate the main dimensions for a 250kVA, 6600/415V, 50Hz, 3 phase core type transformer. CO2 7 Marks

   Assume the following data:

   Emf / turn = 10V, maximum value of flux density = 1.1 tesla. Current density 2.5A/mm^2, window space factor = 0.3, overall height = overall width, stacking factor = 0.9. Use a 3 stepped core, the width of largest stamping is 0.9. Net iron area = 0.6d^2. Where d = diameter of the circumscribing circle.

(OR)

6. a) Derive an expression for the leakage reactance of the primary of a transformer. State clearly the assumptions made. CO1 7 Marks

   b) A single phase, 240V, 50Hz transformer is built from stampings having a relative permeability of 1000. The length of flux path is 1.8m, the area of cross section of the core is 1.8×10^{-3} mt^2 and the primary winding has 650 turns. Estimate the maximum value of flux and the no load current of the transformer. The iron loss at working flux density is 2.6 watts/kg. Iron weights 7.8×10^3 kg/mt^3. Stacking factor 0.9. CO3 7 Marks

UNIT-IV

7. a) Discuss the various factors which influence the selection of air gap, stator and rotor slots in an induction motor. CO1 7 Marks

   b) Determine the main dimensions, turns/phase, no. of slots, conductor area and slot area in an induction motor, rated for 250H.P 400V, 3 phase, 1410 r.p.m (sliping induction motor). Assume $B_{average}$ = 0.5 tesla. Specific electric loading 30,000 AC/m. Efficiency 0.9, pf = 0.9, winding factor = 0.955. Current density = 3.5 A/mm^2. Slot space factor = 0.4, Ratio of core length to pole pitch = 1.2. The machine is delta connected. CO4 7 Marks

(OR)

8. a) Discuss the procedure for the design of the rotor of a single phase induction motor. CO5 7 Marks

   b) What is a short circuit ratio in a synchronous machine? How does it influence the design of alternators? CO1 7 Marks

UNIT-V

9. Write short notes on:

   i) Peripheral velocity and its influence on design of machines. CO3 4 Marks

   ii) Advantages of salient synchronous machine. CO1 4 Marks

   iii) Design of the short circuit ratio for salient synchronous machine. CO3 6 Marks

(OR)

10. Answer the following:

    i) Design the rotor of salient synchronous machine. CO3 5 Marks

    ii) Design the shape of pole face of salient synchronous machine. CO3 5 Marks

    iii) Estimation the air gap length of salient synchronous machine. CO3 4 Marks

CODE No.: 16BT60207 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

ADVANCED CONTROL SYSTEMS
[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. What is a Lag Compensator? Obtain the transfer function of Lag Compensator and draw the pole – zero plots. CO1 14 Marks

(OR)

2. Consider a Type-1system with an open loop transfer function of CO3 14 Marks

$$G_f(s) = \frac{K}{S(S+1)(S+4)}$$

Design a lead compensator so that the system is to be compensated to meet the following specifications

Damping ratio (ξ) = 0.5

Undamped natural frequency ω_n= 2

Using transient response specifications the desired dominant closed loop poles are found to lie at $S_d = -1 \pm j1.73$

Note: Use root locus method.

UNIT-II

3. a) Consider a state model CO2 10 Marks

$$\dot{X} = AX + BU \text{ where } A = \begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ -40 & -34 & -10 \end{bmatrix};$$

$$B = \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix}$$

i) Find Eigen values of A.

ii) Show that the transformation matrix is diagonal matrix.

b) Write a note on Jordan canonical form. CO1 4 Marks

(OR)

4. Consider the system given by $\frac{Y(S)}{U(S)} = \frac{s+3}{S^2+3S+2}$. CO2 14 Marks

Obtain the state space representations in the controllable canonical form, observable canonical form and diagonal canonical form.

UNIT-III

5.		Derive the describing function of dead zone with saturation nonlinearity	CO2	14 Marks

(OR)

6.	a)	Discuss the different types of physical nonlinearities.	CO1	7 Marks
	b)	Explain the procedure for construction phase trajectory.	CO1	7 Marks

UNIT-IV

7.		Discuss the Liapunov stability criterion (Liapunov's stability and instability theorems) to evaluate the stability of the system.	CO4	14 Marks

(OR)

8.		Consider the state equation $\dot{X} = AX$ *where* $A = \begin{bmatrix} -1 & -2 \\ 1 & -4 \end{bmatrix}$ Select an appropriate technique and examine the stability of the system.	CO5	14 Marks

UNIT-V

9.	a)	Discuss necessary and sufficient conditions for arbitrary pole placement.	CO1	5 Marks
	b)	Consider the system defined by state equations $\dot{X} = AX$ *and* $Y = CX$ *where* $A = \begin{bmatrix} -1 & 1 \\ 1 & 2 \end{bmatrix}$ $C = \begin{bmatrix} 1 & 0 \end{bmatrix}$ Design a full order state observer. The desired Eigen values for the observer matrix are $\mu 1 = -5$, $\mu 2 = -5$	CO3	9 Marks

(OR)

10.		With the help of a neat block diagram, discuss design procedure for Full Order Observer.	CO3	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

HIGH VOLTAGE ENGINEERING

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	State Paschen's law, draw the Paschen's curve also mention the applications of Paschen's law.	CO1, CO2, CO4	7 Marks
	b)	Explain two important conditions to be satisfied for a collision of an electron with an atom to be an ionizing one.	CO4	7 Marks
		(OR)		
2.		Explain the breakdown mechanism of Liquids and Composite Insulators.	CO1, CO2	14 Marks

UNIT-II

3.	a)	Describe with a neat sketch, the working of a Van de Graaff generator. What are the factors that limit the maximum voltage obtained?	CO2, CO3	7 Marks
	b)	Explain with diagrams, different types of rectifier circuits for generation of high DC voltages.	CO2, CO3	7 Marks
		(OR)		
4.		Explain the different schemes for cascade connection of transformers for producing very high AC voltages.	CO1, CO2, CO3	14 Marks

UNIT-III

5.	a)	How are the wave front and wave tail times controlled in impulse generator circuits?	CO2	7 Marks
	b)	Explain one method of controlled tripping of impulse generators. Why is controlled tripping necessary?	CO3	7 Marks
		(OR)		
6.	a)	How are rectangular current pulses generated for testing purposes? How is their time duration controlled?	CO2, CO3	7 Marks
	b)	Rogowski coil is required to measure impulse current of 8kA having rate of change of current of 1010A/sec. The voltmeter is connected across the integrating circuit which reads `8' volts for full scale deflection. The input to the integrating circuit is from the Rogowski coil. Determine the mutual inductance of coil, resistance and capacitance and of the integrating circuit to be used.	CO2, CO3	7 Marks

UNIT-IV

7.		Give the basic circuit for measuring the peak voltage of: (i) AC voltage. (ii) impulse voltage. What is the difference in measurement technique in the above two cases?	CO3, CO7	14 Marks
		(OR)		
8.		Write short notes on Sphere Gap for measuring of high DC, AC and impulse voltages. Also explain the factors affecting the sphere gap measurement.	CO5, CO6, CO7	14 Marks

UNIT-V

9.	a)	Mention the different electrical tests done on isolators and circuits breakers.	CO5, CO6	8 Marks
	b)	Explain the method of impulse voltage test of high voltage transformers. How a fault of insulator is located in this test.	CO5, CO6	6 Marks

(OR)

10.	a)	What are the different power frequency tests done on insulators? Mention the procedure for testing.	CO5	7 Marks
	b)	Briefly explain how partial discharges in an insulation system or equipment can be detected and displayed.	CO5, CO6	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

SPECIAL ELECTRICAL MACHINES

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Explain the principle of working of a permanent magnet stepper motor with neat diagram.	CO1	7 Marks
	b)	Derive the torque equation of a stepper motor.	CO2	7 Marks
		(OR)		
2.	a)	Draw the block diagram of open- loop control scheme for stepper motor. Discuss the function of different blocks in the control circuit.	CO1	10 Marks
	b)	Explain the dynamic characteristics of stepper motor with neat sketch.	CO1	4 Marks

UNIT-II

3.	a)	Explain with neat diagram, the construction and working principle of switched reluctance motor.	CO1	10 Marks
	b)	Draw and explain the torque-rotor position and torque-speed characteristics of switched reluctance motor.	CO1	4 Marks
		(OR)		
4.	a)	A 3-Φ switched reluctance motor has 6 stator poles and 4 rotor teeth. Draw the feasible zone for stator and rotor pole arcs. Design the pole arc and rotor tooth arc.	CO4	10 Marks
	b)	What are the merits and demerits of switched reluctance motor?	CO2	4 Marks

UNIT-III

5.	a)	Discuss the construction details of radially laminated type rotor based synchronous reluctance motor with neat diagram.	CO3	10 Marks
	b)	Draw and explain a typical torque-speed characteristic of synchronous reluctance motor.	CO1	4 Marks
		(OR)		
6.	a)	Explain the fast torque response control scheme for synchronous reluctance motor with a neat block diagram.	CO3	10 Marks
	b)	State the applications of synchronous reluctance motor.	CO6	4 Marks

UNIT-IV

7.	a)	Explain the principle of operation of permanent magnet brushless DC motor with neat diagram.	CO1	8 Marks
	b)	How do you classify BLDC motors? Explain.	CO6	6 Marks
		(OR)		
8.	a)	Describe the operation of BLDC square wave motor with 180^0 magnet arc configuration with necessary diagrams.	CO2	10 Marks
	b)	What is meant by sensor less control? What are its advantages?	CO3	4 Marks

UNIT-V

9.	a)	Derive the thrust equation of linear synchronous motor.	CO2	8 Marks
	b)	Explain the working of transverse flux linear induction motor.	CO1	6 Marks

(OR)

10.	a)	A vehicle is propelled by a linear induction motor. The motor has 100 poles with a pole pitch of 0.5m. Find the vehicle speed in kmph when the vehicle is running with a slip of 0.25 at a frequency of 50Hz.	CO4	7 Marks
	b)	Draw the block diagram of control scheme for linear synchronous motor. Discuss the function of different blocks in the control circuit.	CO5	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

ENERGY AUDIT AND CONSERVATION
[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	What is the significance of energy audit and energy conservation?	CO1	6 Marks
	b)	Interpret the need of Pie-charts, Sankey diagram and load profile for an industry.	CO9	8 Marks

(OR)

2.	a)	Explain the methodology and steps of detailed energy audit with special reference to a power plant.	CO1	6 Marks
	b)	Classify energy index and cost index.	CO2	8 Marks

UNIT-II

3.	a)	Describe energy conservation checklist for building structures.	CO5	7 Marks
	b)	Differentiate green buildings and smart buildings with any simple case study.	CO5	7 Marks

(OR)

4.	a)	State the key elements of an energy audit as defined in the Energy Conservation Act 2001.	CO8	7 Marks
	b)	Explain in brief the "position of energy manager" and "Energy committee" in an organisation? In your own words, explain what do you expect as support from top management?	CO4	7 Marks

UNIT-III

5.	a)	Describe the energy conservation opportunities for residential and commercial application.	CO6	6 Marks
	b)	Explain solar passive architecture and eco-housing concepts suitable to Indian environment.	CO6	8 Marks

(OR)

6.	a)	Explain the factors affecting the efficiency of normal motor.	CO2	8 Marks
	b)	Explain the function of data loggers and their importance in audit process.	CO2	6 Marks

UNIT-IV

7.	a)	Analyze various energy audit instruments and their importance in energy audit.	CO1	8 Marks
	b)	Explain the constructional differences between normal motor and energy efficient motor.	CO1	6 Marks

(OR)

8.	a)	Explain energy conservation opportunities for electric motors.	CO2	7 Marks
	b)	A 10 HP electric motor is being used 10 hrs. per week to grind feed. A new replacement motor is estimated to save 5 kwh of energy during each hours of operation. If replacement cost for 10 HP motor is Rs. 45000/-. Find simple payback period. Assume electricity cost of Rs. 4.50 per kwh.	CO10	7 Marks

UNIT-V

9.	a)	Explain the following i) internal rate of return ii) life cycle costing.	CO5	7 Marks
	b)	A company invests Rs.10 lakhs and completes an energy efficiency project at the beginning of year 1. The firm is investing its own money and expects an internal rate of return (IRR), of at least 26% on constant positive annual net cash flow of Rs.2 lakhs, over a period of 10 years, starting with year 1. i) Will the project meet the firm's expectations? ii) What is the IRR of this measure?	CO10	7 Marks

(OR)

10.	a)	Explain, Why a project with a high IRR is not necessarily more attractive than a project with lower IRR?	CO5	7 Marks
	b)	Explain Life cycle costing analysis with suitable example.	CO9	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

CAD / CAM

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Summarize the benefits and applications of CAD.	CO1	7 Marks
	b)	With neat sketch, discuss the product life cycle.	CO2	7 Marks
		(OR)		
2.	a)	State and explain the necessity of a study of a typical product lifecycle to establish the scope and definition of CAD/CAM in an engineering environment.	CO3	7 Marks
	b)	Demonstrate the CAD database models with the help of neat sketches.	CO2	7 Marks

UNIT-II

3.	a)	State the principle of raster scan display and apply it in display graphics.	CO3	7 Marks
	b)	What are the requirements of geometric modeling?	CO1	7 Marks
		(OR)		
4.	a)	Find the equation of a Bezier curve which is defined by four control points as (80,30,0), (100,100,0), (200,100,0) and (250,30,0).	CO4	7 Marks
	b)	Explain 3-d scaling, rotation, reflection and translation with suitable example.	CO2	7 Marks

UNIT-III

5.	a)	With a neat sketch, explain the functioning of a NC machine. State three important differences between NC and CNC.	CO2	7 Marks
	b)	Discuss the salient features of machining centers.	CO1	7 Marks
		(OR)		
6.	a)	Describe the axis representation system used for CNC Milling machines. Discuss the various interpolation methods used in NC machines.	CO1	7 Marks
	b)	Sketch and explain automatic tool changers.	CO2	7 Marks

UNIT-IV

7.	a)	Explain the various difficulties in traditional process planning in detail.	CO1	7 Marks
	b)	Discuss how part classification is done in the context of GT.	CO3	7 Marks
		(OR)		
8.	a)	Briefly explain the need of CAPP (Computer Aided Process Planning).	CO1	7 Marks
	b)	How do you overcome the difficulties in traditional process planning by adopting CAPP method?	CO5	7 Marks

UNIT-V

9.	a)	Explain the integration of CAQC with CAD/CAM systems.	CO2	7 Marks
	b)	Explain the different types of computer control systems used in CIM.	CO1	7 Marks
		(OR)		
10.	a)	Define CIM and list four benefits of CIM.	CO1	7 Marks
	b)	Explain in detail the different types of database requirements in CIM. Discuss the integration of CAD database and CMM operation.	CO2	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

HEAT TRANSFER
[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Derive the heat conduction equation in cartesian coordinates.	CO2	9 Marks
	b)	A solid cylinder rod of diameter 10mm and length 150mm is insulated on its cylindrical surfaces. Determine the heat flow rate through the rod if k = 0.78W/mK. The temperatures of the ends of the rods are 0^0C and 100^0C respectively.	CO4	5 Marks

(OR)

2.		A composite slab consists of 250mm fire clay brick (k = 1.09W/mK) inside, 100mm fired earth brick (0.26 W/mK) and outer layer of common brick (0.6 W/mK) of thickness 50mm. If inside surface is at 1200^0C and outside surface is at 100^0C, find: i) Heat flux., ii) The temperature of the junctions and the temperature at 200mm from the outer surface of the wall.	CO5	14 Marks

UNIT-II

3.	a)	Two fins are identical except diameter of one is twice that of the other. Compare their efficiencies and effectiveness.	CO2	4 Marks
	b)	A Cu rod of (k = 320 W/mK) and diameter 5cm and length 50cm is fixed between two plates both maintained at 100^0C. If the environment is at 20^0C and the convective heat transfer coefficient is 15 W/m²K. Find the heat loss from the fin and temperature in the rod at its mid position.	CO5	10 Marks

(OR)

4.		A 3mm thick plate of aluminum alloy (k=177 W/mK) and $\alpha = 73 \times 10^{-6}\ m^2/s$ finished on both sides with an epoxy coating that must be cured at or above 150^0C for at least 5 min. The production time for the curing operation involves two steps: 1) heat in an oven with air at 175^0C and a convection coefficient of 20 W/m²K and 2) cooling in an enclosure with air at 25^0C and convection coefficient of 10 W/m²K. i) Assuming the panel is initially at 25^0C. What is minimum residence time for the pane in the oven? ii) What is the total elapsed time for the two steps curing operation if it is completed when the panel has been cured and cooled to the temperature of 37^0C?	CO5	14 Marks

UNIT-III

5.	a)	Explain the development of boundary layer over a cylinder.	CO3	6 Marks
	b)	The convective heat transfer coefficient is found to be a function of the parameters h=f (D, k, V,μ,ρ, Cp). Fix the dimensionless π-parameters that determines the process using Buckingham's π method.	CO2	8 Marks

(OR)

6.	a)	Discuss the effect of surface roughness on the velocity distribution in turbulent flow.	CO1	4 Marks
	b)	A thin flat plate has been placed longitudinally in a stream of air at 20^0C and over which air flows with undistributed velocity of 7.5m/s. The surface of the plate is maintained at a uniform temperature of 120^0C. (i) Calculate the heat transfer coefficient at 0.8m from the leading edge of the plate. (ii) Calculate the rate of heat transfer from one side of the plate to the air over the first 0.8m length. Assume unit width of the plate.	CO4	10 Marks

UNIT-IV

7.	a)	Derive the expression for LMTD in counter flow double pipe heat exchanger.	CO3	7 Marks
	b)	A steam condenser works at a temperature of 60^0C transferring 250kW of energy. The cooling water enters the condenser at 20^0C with a flow rate of 2kg/sec. Find the logarithmic mean temperature difference.	CO4	7 Marks

(OR)

8.	a)	What are the assumptions made in Nusselt theory of film condensation?	CO1	4 Marks
	b)	With a neat sketch, explain the different regimes on pool boiling curve.	CO2	10 Marks

UNIT-V

9.	a)	Define absorptivity, reflectivity and transmissivity of radiant energy.	CO1	4 Marks
	b)	Estimate the solar radiation on a plate normal to the sun rays. Assume the sun to be a black body at a temperature of 5527^0C. The diameter of the sun is 1.39×10^6km and its distance from the earth is 1.5×10^8km.	CO5	10 Marks

(OR)

10.		Two large parallel planes having emissivity 0.3 and 0.4 are maintained at a temperature 800^0C and 500^0C respectively. A radiation shield of emissivity 0.05 on both sides is placed in between. Determine the: i) rate of heat transfer per unit area if shield is not there. ii) heat transfer with the shield. iii) the temperature of the shield.	CO4	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

NON-CONVENTIONAL ENERGY SOURCES
[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss the renewable energy scenario in India and list its advantages over other Renewable Sources.	CO1	6 Marks
	b)	Derive the expression for total radiation on an inclined surface. Show that a horizontal surface receives no ground-reflected radiation.	CO2	8 Marks
		(OR)		
2	a)	Explain the terms Declination angle and Hour angle with respect to solar radiation geometry.	CO2	6 Marks
	b)	Calculate total radiation on tilted surface at 30º to horizontal at Delhi (28.68º N) on March 22. The horizontal beam and diffuse radiation are 60 W/m² and 150 W/m² respectively and solar time is 11 AM. Take albedo of ground is 0.2.	CO2	8 Marks

UNIT-II

3	a)	How the performance of liquid flat plate collector can be analyzed? Discuss in detail.	CO2	8 Marks
	b)	Classify the solar air collectors. Give the main applications of a drier.	CO2	6 Marks
		(OR)		
4		Enumerate different types of concentrating type collectors. Describe a collector used in power plant for generation of electrical energy.	CO2	14 Marks

UNIT-III

5	a)	Explain the advantages of solar water heater with respective to conventional water heaters.	CO3	8 Marks
	b)	Draw the schematic and give functional description of solar pond in detail.	CO3	6 Marks
		(OR)		
6	a)	Describe the principle of working and constructional details of a basic thermionic generator.	CO3	8 Marks
	b)	What is the principle of MHD Power Plant? Explain the working of any one type of MHD Plants.	CO3	6 Marks

UNIT-IV

7	a)	Discuss the advantages and disadvantages of horizontal and vertical axis wind mill.	CO3	6 Marks
	b)	Write a short note on: i) Savonius rotor; ii) Darrius rotor.	CO3	8 Marks
		(OR)		
8	a)	Explain the constructional detail and working of KVIC digester.	CO2	6 Marks
	b)	Explain the process of photosynthesis. What are the conditions, which are necessary for it?	CO2	8 Marks

UNIT-V

9	a)	Write a short note on vapour-dominated geothermal power plant.	CO2	7 Marks
	b)	Describe the closed cycle OTEC system, with its advantages over open cycle system.	CO5	7 Marks

(OR)

10	a)	What is meant by geothermal energy? What are the deciding factors to use in power generation?	CO4	7 Marks
	b)	How do you classify tidal power plants? Describe single basin one way and double basin one way.	CO2	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

GAS TURBINES AND JET PROPULSION

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Discuss the importance of work ratio in Gas turbine cycles.	CO1	7 Marks
	b)	Compare Gas turbines with Steam turbines.	CO1	7 Marks
		(OR)		
2.	a)	What are the deviations in actual Gas turbine cycle from ideal cycle? Explain.	CO1	4 Marks
	b)	The maximum and minimum temperatures in a simple Gas turbine plant working on the joule cycle are 1000K and 288K respectively. The pressure ratio is 6, and the isentropic efficiencies of the compressor and turbine are 85 and 90 percent respectively. Calculate the efficiency and specific work output of the plant.	CO1	10 Marks

UNIT-II

3.	a)	Obtain an expression for work done in a dynamic compressor.	CO2	4 Marks
	b)	A centrifugal compressor delivers 100kg of air per minute at a pressure of 2 bar when compressing from 1 bar and 15^0C. If the temperature of the air delivered is 97^0C and no heat is added to the air from external sources during compression, determine the efficiency of the compressor relative to ideal adiabatic compression and estimate the power absorbed. Calculate also the change in entropy of the air.	CO2	10 Marks
		(OR)		
4.	a)	Illustrate the working of an axial flow compressor.	CO2	4 Marks
	b)	The pressure of air being compressed in a centrifugal compressor is doubled. The inlet temperature is 27^0C and final temperature 105^0C. Calculate the isentropic efficiency of the compressor and power required to drive it, if 30kg of air are compressed per minute.	CO2	10 Marks

UNIT-III

5.	a)	What are the main configurations adopted in gas turbine combustion chambers? Give a comparative study.	CO3	8 Marks
	b)	How combustion efficiency of a gas turbine combustion chamber is defined? What are the main factors on which it depends?	CO3	6 Marks
		(OR)		
6.	a)	Discuss the methods of introducing fuel into combustion chamber of a gas turbine.	CO3	10 Marks
	b)	What is the importance of combustion intensity in a combustion chamber? Is the combustion intensity same for an aircraft gas turbine and industrial gas turbine?	CO3	4 Marks

UNIT-IV

7.	a)	Draw a schematic diagram of a turbojet engine and explain its working by the help of T-s diagram.	CO4	10 Marks
	b)	How overall efficiency of a jet engine is related to its thermal, transmission and propulsion efficiencies?	CO4	4 Marks

(OR)

8.		In a turbojet unit flying at a speed of 1000km/hr at an altitude where the ambient temperature is -43^0C and the maximum temperature in the cycle is 700^0C. The pressure ratio was 10. Assuming that the static pressure at compressor inlet and nozzle outlet are equal to the local atmospheric pressure and that the gases leave the turbine with a velocity of 90m/s, calculate the net thrust of the engine for a mass flow rate of 35kg/s. The isentropic efficiency of the nozzle is 0.95.	CO4	14 Marks

UNIT-V

9.	a)	Explain the principle of Rocket propulsion.	CO5	6 Marks
	b)	Obtain a best expansion condition for a rocket nozzle with a given throat diameter.	CO5	8 Marks

(OR)

10.	a)	Draw a schematic diagram of a solid propellant rocket and explain its working. What are the applications of this type of rocket?	CO5	8 Marks
	b)	Discuss about Plasma propulsion used in rockets.	CO5	6 Marks

CODE No.: 16BT60305 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

HYDRAULICS AND PNEUMATICS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	With neat sketch, explain hydraulic fluid power system.	CO1	7 Marks
	b)	Discuss actuators and accumulators used in hydraulic power systems.	CO1	7 Marks
		(OR)		
2.	a)	A gear pump has a displacement of 50,000m^3. It delivers 100 liters per minute at 1400 r.p.m and 8N/mm^2. If the prime over input torque is 75N-m, determine overall efficiency and theoretical torque required to operate the pump.	CO2	7 Marks
	b)	Explain construction and working principle of Vane pump.	CO1	7 Marks

UNIT-II

3.	a)	Design hydraulic circuit for operating punching machine.	CO2	7 Marks
	b)	Discuss with neat sketch the working of solenoid valve.	CO3	7 Marks
		(OR)		
4.	a)	Design hydraulic circuit to operate furnace door open and close.	CO2	7 Marks
	b)	Explain direction control valves.	CO3	7 Marks

UNIT-III

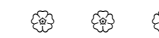
5.	a)	Describe working principle of an air compressor.	CO3	7 Marks
	b)	Explain the ANSI symbols for all the types of actuators used in Pneumatics.	CO5	7 Marks
		(OR)		
6.	a)	Describe the operation of an FRL trio unit.	CO3	7 Marks
	b)	Explain pneumatic cylinders and valves.	CO3	7 Marks

UNIT-IV

7.		Three pneumatic cylinders A, B, C are used in an automatic sequence of operation. A cylinder extends, B cylinder retracts, C cylinder retracts and then A cylinder retracts, C cylinder extends and B cylinder extends. Develop pneumatic circuits by cascade method. Also sketch travel step diagram and briefly explain.	CO4	14 Marks
		(OR)		
8.	a)	Design of circuit with air pilot control of a double acting cylinder.	CO4	7 Marks
	b)	Explain speed control circuits used in pneumatic circuits.	CO3	7 Marks

UNIT-V

9.	a)	Describe any one of the electro-pneumatic circuits used in robotic system.	CO6	7 Marks
	b)	Enumerate various criteria for the selection of electro pneumatic components.	CO6	7 Marks
		(OR)		
10.	a)	How the PLC is used in pneumatic power control and explains with suitable example.	CO5	7 Marks
	b)	Describe relay and contactors used in electro pneumatic circuits.	CO5	7 Marks



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

SUPPLY CHAIN MANAGEMENT

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	Identify three key supply chain decision phases and explain the significance of each one of them.	CO1	14 Marks
	(OR)		
2.	Explain why achieving strategic fit is critical to company's overall success and discuss the importance of expanding the scope of strategic fit across the supply chain.	CO2	14 Marks

UNIT-II

3.	Discuss the importance of inventory management in supply chain management and explain how demand uncertainty affects it.	CO3	14 Marks
	(OR)		
4.	Discuss about distribution resource planning in supply chain management.	CO3	14 Marks

UNIT-III

5.	What is bullwhip effect and how to minimize it and describe the push and pull systems of a supply chain?	CO3	14 Marks
	(OR)		
6.	Explain impact of internet on supply chain management with suitable examples.	CO5	14 Marks

UNIT-IV

7.	Evaluate the strengths and weaknesses of three major different modes of transportation.	CO4	14 Marks
	(OR)		
8.	Identify and explain trade-offs that shippers need to consider when designing a transportation network.	CO4	14 Marks

UNIT-V

9.	Discuss some of the global issues and outsourcing problems involved in supply chain management.	CO4	14 Marks
	(OR)		
10.	Discuss about: i) Retail – Supplier partnership. ii) Distribution integration.	CO2	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

INDUSTRIAL ROBOTICS

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Give line diagram of a polar coordinate robot and show the associated degrees of freedom and work volume.	CO2	7 Marks
	b)	A robot with single degrees of freedom has one sliding joint with a full range of 1.0M. The robots control memory has a 12bit storage capacity. Determine the control resolutions for the access of motion.	CO1	7 Marks
		(OR)		
2.	a)	Give line diagram of a Cartesian robot indicating various joints and their relative motions. Show the associated degrees of freedom and work volume.	CO3	7 Marks
	b)	Write short notes on different types joints used in robots, give the degrees of freedom associated with each joint.	CO2	7 Marks

UNIT-II

3.		Explain the working principle of Electric servo motor with neat sketch. List out its advantages and disadvantages.	CO2	14 Marks
		(OR)		
4.	a)	Define the following with respect to stepped motor. i) Step Angle. ii) Holding torque. iii) Detent torque.	CO3	7 Marks
	b)	Compare stepper motor and D.C motor drives for a motor.	CO2	7 Marks

UNIT-III

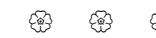
5.		Illustrate the important steps in D.H convention.	CO5	14 Marks
		(OR)		
6.		Explain about world coordinate system with neat sketches.	CO4	14 Marks

UNIT-IV

7.	a)	With neat sketch, explain the working of LVDT.	CO2	7 Marks
	b)	With neat sketch, explain the working of potentiometric sensors.	CO2	7 Marks
		(OR)		
8.	a)	With neat sketch, explain the working of Optical encoder.	CO2	7 Marks
	b)	With neat sketch, explain the working of Bi metallic strip transducer.	CO2	7 Marks

UNIT-V

9.	a)	Investigate the various options needed to apply A.I techniques in the complex robotic designs.	CO4	7 Marks
	b)	Analyze various new software packages available to meet the industry needs in the robotic industry.	CO2	7 Marks
		(OR)		
10.	a)	Discuss the advantages and benefits of robot arc welding.	CO6	7 Marks
	b)	Explain how the robot is used for spray painting application.	CO5	7 Marks



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

ANTENNAS AND WAVEGUIDES
[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) An air-filled rectangular waveguide has dimensions of a = 6cm and b = 4cm. The signal frequency is 3GHz. Compute the following for the TE_{10}, TM_{11} modes. CO4 7 Marks
   i) Cut-off frequency.
   ii) Wavelength in the waveguide.
   iii) Phase constant and phase velocity in the waveguide.
   iv) Group velocity and wave impedance in the waveguide.

   b) What is *dominant mode*? Derive the expressions for β, f_c, λ_c, λ_g and v_p for the dominant mode of rectangular wave-guide. CO1, CO2 7 Marks

(OR)

2. a) Determine all the modes which can propagate in a 3cm x 1.5cm air filled rectangular wave-guide at 10GHz. CO4 7 Marks

   b) Solve the wave equation for a rectangular wave-guide and obtain the solution for the field components of TM_{mn} mode of propagation. CO3 7 Marks

UNIT-II

3. a) Illustrate the use of *retarted vector potential* to calculate the electromagnetic field radiated by an alternating current element in free space and hence deduce the field component H_φ. CO1, CO3 7 Marks

   b) Derive the expression for the total power radiated by the current element, Idlcosωt and hence deduce the expression for the radiation resistance, Rrad. CO2 7 Marks

(OR)

4. a) Starting with the expressions for Er, Eθ and Hφ for the current element, Idlcosωt show that, CO2 7 Marks

$$H_\varphi = \frac{Idl\sin\theta}{4\pi r} e^{-j\beta r}\left(j\beta + \frac{1}{r}\right)$$

$$E_\theta = \frac{Idl\sin\theta}{4\pi r}\eta\, e^{-j\beta r}\left(jB + \frac{1}{r} + \frac{1}{j\beta r^2}\right)$$

$$E_r = \frac{Idl\cos\theta}{4\pi r}\eta\, e^{-j\beta r}\left(\frac{2}{r} + \frac{2}{j\beta r^2}\right)$$

Where $\beta = \omega/v = 2\pi/\lambda$, $= \sqrt{\mu/\varepsilon}$.

   b) Discuss the significance of $1/r$, $1/r^2$ and $1/r^3$ terms of the above field components. CO1 7 Marks

UNIT-III

5.	a)	Given a linear, broadside, uniform array of 10 isotropic elements with separation of d= λ/4 between the elements, find the directivity of the array.	CO4	7 Marks
	b)	The radiation pattern of a two element array is given as $E_n(\theta, \varphi) = cos\theta . cos(\psi/2)$, where $\psi = (\beta d cos\theta + \alpha)$. Calculate the *null* and *maxima* directions and hence draw the *radiation pattern* if $d = \lambda/4$ and $\alpha = -\pi/2$ (*Note*: *use principle of pattern multiplication*).	CO4	7 Marks

(OR)

6.	a)	Three isotropic sources, with spacing d between them are placed along the z-axis. The excitation coefficients of each outside element are unity while that of the centre element is 2. For a spacing of $d = \frac{\lambda}{4}$ between the elements find the: i) Array factor. ii) Angles where the nulls of the pattern occur. iii) Angles where the maxima of the pattern occur.	CO5	7 Marks
	b)	Describe the salient features of end fire array and Hansen Wood yard end fire array.	CO1	7 Marks

UNIT-IV

7.	a)	Illustrate the design parameters of a helix antenna, analyze helical antenna in normal mode operation.	CO3, CO2	7 Marks
	b)	Analyze helical antenna axial mode of operations.	CO2	7 Marks

(OR)

8.	a)	Create a cassegrain feed for a parabolic reflector.	CO4	7 Marks
	b)	Suggest an antenna which converts curved wave front to plane wave front during transmission and vice versa during reception. Elaborate its functioning with neat sketches.	CO1	7 Marks

UNIT-V

9.	a)	Analyse the importance of far field and near field in the antenna measurements.	CO2	7 Marks
	b)	With neat diagram, explain the range instrumentation.	CO1	7 Marks

(OR)

10.	a)	Illustrate the source of errors in the antenna measurements.	CO5	7 Marks
	b)	List and explain the types of antenna ranges.	CO1	7 Marks

CODE No.: 16BT60402 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

DIGITAL SIGNAL PROCESSING

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Consider a discrete – time system with input $x(n)$ and output $y(n)$ related by $y(n) = \sum_{k=n-n_0}^{n+n_0} x(k)$. Where n_0 is a finite positive integer. CO4 7 Marks

   i) Is this system linear?
   ii) Is this system time-invariant?
   iii) If x(n) is known to be bounded by a finite integer B_x, it can be shown that y(n) is bounded by a finite number C. We conclude that the given system is stable. Express C interms of B_x and n_0.

   b) Find the response of a system described by the difference equation $y(n) + 2\,y(n-1) + y(n-2) = x(n) + x(n-1)$ for input $x(n) = (0.5)^n\,u(n)$ with initial conditions $y(-1) = y(-2) = 1$. CO2 7 Marks

(OR)

2. a) Given the sequence x(n)=(6-n)[u(n)-u(n-6)] make a sketch of CO4 7 Marks

   i) $Y(n) = x(4-n)$.
   ii) $Y(n) = x(n^2 - 2n + 1)$.

   b) Find the DTFT of the sequence $\boldsymbol{x(n) = \cos(n\pi/3)u(n)}$. CO2 7 Marks

UNIT-II

3. Using FFT algorithm compute the output of a linear filter described by $h(n) = \{1, 2, 3, 2, 1\}$ and $x(n) = \{1, 1, 1, 1\}$. CO2 14 Marks

(OR)

4. a) Compute the N-point DFT of the length N-sequence CO2 7 Marks

   $x(n) = \cos\left(\frac{2\pi rn}{N}\right)$; $0 \le n \le N-1$; $0 \le r \le N-1$.

   b) Explain the inverse FFT algorithm using DIF algorithm to compute inverse DFT for $N = 8$. Draw the signal flow graph for the same. CO2 7 Marks

UNIT-III

5. a) Derive the relation between analog and digital frequency in bilinear transformation. CO2 7 Marks

   b) Convert the following analog filter transfer function using backward difference method, Impulse invariant method and Bilinear Transformation method. $H(s) = 1/(s + 0.2)$, consider $T = 1$ Sec. CO5 7 Marks

(OR)

6. a) Design an analog Butterworth filter that has a -2db pass band attenuation at a frequency of 20 rad/sec and at least -10dB stop band attenuation at 30 rad/sec (assume $\Omega c = 21.3868$ rad/sec). CO3 8 Marks

   b) Derive an expression for order of the Chebyshev analog prototype filter. CO2 6 Marks

UNIT-IV

7.	a)	Derive the frequency response of linear phase FIR filters when impulse response is symmetric with centre of symmetry at $(N - 1)/2$ and N is odd.	CO2	7 Marks
	b)	Explain cascade-form structure and obtain the cascade-form realization of the given FIR filter system function. $H(Z) = 1 + \frac{6}{5}Z^{-1} + \frac{7}{5}Z^{-2} + \frac{26}{25}Z^{-3} + \frac{1}{5}Z^{-4}$.	CO5	7 Marks

(OR)

8.	a)	Using a rectangular window, design LPF with a pass-band gain of unity, cut-off frequency of 1000Hz and working at a sampling frequency of 5KHz. Take the length of the impulse response as 7.	CO3	8 Marks
	b)	Compare IIR and FIR filters.	CO1	6 Marks

UNIT-V

9.	a)	List the relative merits and demerits of RISC and CISC processors.	CO1	7 Marks
	b)	Explain about special addressing modes in detail.	CO1	7 Marks

(OR)

10.	a)	Write a short note on Memory Access schemes in P-DSPs.	CO1	7 Marks
	b)	Write the salient features of TMS320C6X family of digital signal processor.	CO1	7 Marks

CODE No.: 16BT60404 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

IMAGE PROCESSING

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		Explain the fundamental steps involved in digital image processing systems.	CO1	14 Marks

(OR)

2.		Discuss in detail about:		
		i) Image sampling.	CO1	7 Marks
		ii) Quantization.	CO3	7 Marks

UNIT-II

3.	a)	Discuss how image sharpening is achieved in frequency domain.	CO2	6 Marks
	b)	Differentiate the filtering process between spatial domain and frequency domain.	CO1	8 Marks

(OR)

4.	a)	Define Histogram. Describe the Histogram processing for effective enhancement of images.	CO2	7 Marks
	b)	Outline the basic steps for filtering in the frequency domain with the help of block diagram.	CO3	7 Marks

UNIT-III

5.	a)	Illustrate how periodic noise reduced in frequency domain by using notch filter.	CO2	8 Marks
	b)	Discuss how image averaging reduces the noise in images.	CO2	6 Marks

(OR)

6.	a)	What is minimum mean square error (Wiener) filtering? Explain how it is different from inverse filtering.	CO3	7 Marks
	b)	Explain how adaptive filters are used for restoration in the presence of noise only.	CO3	7 Marks

UNIT-IV

7.	a)	Describe in detail arithmetic coding in image processing.	CO2	7 Marks
	b)	Explain in detail the concept of coding redundancy.	CO3	7 Marks

(OR)

8.	a)	Differentiate lossy compression over lossless compression.	CO3	8 Marks
	b)	Apply various techniques present in image processing to compress an image.	CO5	6 Marks

UNIT-V

9.	a)	Describe adaptive thresholding in the image segmentation.	CO3	8 Marks
	b)	Write a short note on:	CO2	6 Marks
		i) Point detection. ii) Line detection. iii) Edge detection.		

(OR)

10.	a)	Differentiate region-based segmentation from edge-based segmentation in detail.	CO3	7 Marks
	b)	Explain Pseudo colour image processing in detail.	CO1	7 Marks

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CODE No.: 16BT60406 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

TELECOMMUNICATION SWITCHING SYSTEMS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Write about evaluation of Telecommunications.	CO1	7 Marks
	b)	Explain the principles of Crossbar Switching.	CO1	7 Marks
		(OR)		
2.	a)	What is the function of circuit switch? Clearly explain Electronic Space division switching.	CO2	7 Marks
	b)	Distinguish centralized SPC and distributed SPC and explain.	CO2	7 Marks

UNIT-II

3.	a)	Describe the major components of a telephone network.	CO4	7 Marks
	b)	Explain in detail the Subscriber loop system.	CO2	7 Marks
		(OR)		
4.	a)	What are the factors that limit the length of subscribes loop? Discuss them.	CO4	7 Marks
	b)	Explain briefly about transmission plan and charging plan.	CO3	7 Marks

UNIT-III

5.	a)	Explain the differences between in channel and common channel signaling schemes.	CO4	7 Marks
	b)	Consider a group of 1200 subscribers which generate 800 calls during the busy hour. The average holding time is 3.4 minutes. What is the offered traffic in Erlangs, Cent call seconds (CCS) and calls minute (CM)?	CO3	7 Marks
		(OR)		
6.	a)	Write about modes of operation of common channel signaling.	CO3	7 Marks
	b)	Explain about the traffic load and grade of service.	CO2	7 Marks

UNIT-IV

7.	a)	Explain the differences between narrow band ISDN and BISDN.	CO1	7 Marks
	b)	Explain about ISDN interfaces.	CO5	7 Marks
		(OR)		
8.	a)	Explain network level signaling in ISDN.	CO1	7 Marks
	b)	Describe the four categories of messages in the ISDN network layer.	CO5	7 Marks

UNIT-V

9.	a)	Discuss DSL technology.	CO6	7 Marks
	b)	Write about SONET devices, frame and frame transmission.	CO6	7 Marks
		(OR)		
10.	a)	Write short notes on: i) CMTS. ii) SONET.	CO6	7 Marks
	b)	What is ADSL? Explain.	CO5	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

DIGITAL CMOS IC DESIGN

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I		
1.	a)	What are the factors that must be taken into consideration while deciding the transistor logic?	CO1	7 Marks
	b)	Compare CMOS and BiCMOS logic in all respects.	CO2	7 Marks
		(OR)		
2.	a)	Describe all the details about dynamic CMOS logic.	CO1	7 Marks
	b)	What are two phase clocking and how it overcomes the drawbacks of single phase of clocking?	CO1	7 Marks
		UNIT-II		
3.	a)	Draw the stick diagram of two input CMOS NOR gate.	CO1	7 Marks
	b)	What are the factors to be considered while determining the minimum width for poly and metal layers?	CO2	7 Marks
		(OR)		
4.	a)	What is floor planning?	CO1	7 Marks
	b)	What is the necessity of timing simulation?	CO1	7 Marks
		UNIT-III		
5.		What are the sequence of steps involved in static RAM read and write operations?	CO2	14 Marks
		(OR)		
6.		How to minimize the leakage currents in SRAM and DRAM?	CO4	14 Marks
		UNIT-IV		
7.	a)	Compare ideal, lumped and distributed wires in all respects.	CO2	7 Marks
	b)	How to take into the account of inductance of interconnect?	CO4	7 Marks
		(OR)		
8.	a)	What is jitter and discuss its effect on the performance of a sequential circuit?	CO1	7 Marks
	b)	What are the essentials of self timed circuit design?	CO5	7 Marks
		UNIT-V		
9.	a)	Write a short note on design economics.	CO1	7 Marks
	b)	What is meant by standard cell design?	CO1	7 Marks
		(OR)		
10.	a)	What is a programmable interconnect?	CO1	7 Marks
	b)	Distinguish between modularity and regularity.	CO2	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

INFORMATION THEORY AND CODING

[Electronics and Communication Engineering]

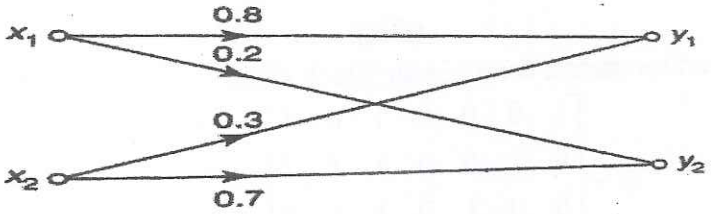
Time: 3 hours Max. Marks: 70

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) An analog signal band limited to 10kHz is quantized in 8 levels of a PCM system with Probabilities of 1/4, 1/5, 1/5, 1/10, 1/10, 1/20, 1/20 and 1/20 respectively. Find the entropy and rate of information. CO1 7 Marks

   b) Find the mutual information for the following binary communication channel. Assume $P(X_1) = 0.6$, $P(X_2) = 0.4$ CO1 7 Marks



(OR)

2. a) For the Joint Probability Matrix, CO1 7 Marks

$$P(X,Y) = \begin{array}{c} \\ x_1 \\ x_2 \\ x_3 \\ x_4 \end{array} \begin{array}{c} \begin{array}{cccc} y_1 & y_2 & y_3 & y_4 \end{array} \\ \begin{bmatrix} 0.05 & 0 & 0.20 & 0.05 \\ 0 & 0.10 & 0.10 & 0 \\ 0 & 0 & 0.20 & 0.10 \\ 0.05 & 0.05 & 0 & 0.10 \end{bmatrix} \end{array}$$

   Find i) H(X); ii) H(Y); iii) H(X,Y); iv) H(X/Y); v) H(Y/X).

   b) Suppose a Generator matrix G = [1 1 1], Construct a (3, 1) code. How many errors can this code correct? Find the code word for data vectors d=0 and d = 1, Comment. CO1 7 Marks

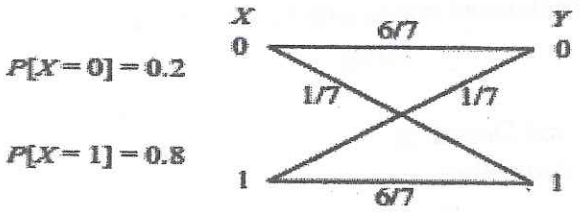
UNIT-II

3. a) CO2 7 Marks

For the given channel matrix : $P\left(\frac{Y}{X}\right) = \begin{bmatrix} \frac{1}{2} & \frac{1}{2} & 0 \\ \frac{1}{2} & 0 & \frac{1}{2} \\ 0 & \frac{1}{2} & \frac{1}{2} \end{bmatrix}$

Calculate H(X), H(Y) and H(X,Y), H(Y/X) when $P(X_1)=0.6$, $P(X_2)=0.4$.

   b) Calculate output symbol probabilities $P(Y_0)$ and $P(Y_1)$ for the following binary symmetric channel. CO2 7 Marks



(OR)

4. Calculate Capacity for Band limited Gaussian channels and parallel Gaussian channels. CO2 14 Marks

UNIT-III

5. The parity check bits of a (8, 4) block code are generated by, CO3 14 Marks

$c_5 = d_1 + d_2 + d_4$

$c_6 = d_1 + d_2 + d_3$

$c_7 = d_1 + d_3 + d_4$

$c_8 = d_2 + d_3 + d_4$

Where d_1, d_2, d_3, and d_4 are the message digits.

i) Find the generator matrix and the parity check matrix for this code.

ii) Find the minimum weight of this code.

iii) Find the error-detecting capabilities of this code.

iv) Show through an example that this code can detect three errors/code words.

(OR)

6. Consider the generator matrix for a Linear Block Code CO3 14 Marks

$$G = \begin{bmatrix} 1 & 0 & 0 & 0 & 1 & 0 & 1 \\ 0 & 1 & 0 & 0 & 1 & 1 & 1 \\ 0 & 0 & 1 & 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 & 0 & 1 & 1 \end{bmatrix}$$

i) Find 'n' and 'k' values; ii) Write 'G' in its systematic form

iii) Deduce all code words; iv) Find d_{min}

v) Analyze the error detecting and error correcting capability of the code.

UNIT-IV

7. Consider the (3, 1, 2) convolution code with $g_1 = (1\ 1\ 0)$, $g_2 = (1\ 0\ 1)$, $g_3 = (1\ 1\ 1)$ CO4 14 Marks

i) Find the constraint length. ii) Find the rate.

iii) Draw the encoder block diagram.

iv) Find the generator matrix.

v) Find the code word for the message sequence (1 1 1 0 1) using time domain and transform domain approach.

(OR)

8. a) Consider a (15, 5) binary cyclic code with $\mathbf{g(x) = 1+x+x^2+x^4+x^5+x^8+x^{10}}$. Find the code word in systematic form for the input sequence (1 0 1 1 0). CO4 7 Marks

b) Consider a (3, 1, 3) convolution code with generator polynomials $g_1 = [1\ 0\ 1\ 0]$, $g_2 = [1\ 1\ 1\ 0]$, $g_3 = [1\ 1\ 0\ 0]$. Draw it's encoder diagram and also find the encoded sequence for the input (1 1 1 0 0 1 1 0) using transform domain approach. CO3 7 Marks

UNIT-V

9. Explain about types of concatenated codes with block diagram CO5 14 Marks

(OR)

10. Write short note on CO5 14 Marks

i) CIRC Encoding and Decoding.

ii) MAP Decoding Algorithm.

CODE No.: 16BT60409 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

LIGHT WAVE COMMUNICATIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	What are the various elements of an optical communication system? Explain each element in brief.	CO1	7 Marks
	b)	What are the different fiber materials used in optical communication? Explain.	CO1	7 Marks
		(OR)		
2.	a)	Discuss briefly the advantages of optical fiber communication.	CO1	7 Marks
	b)	Discuss the total internal reflection in OFC using Snell's law.	CO2	7 Marks

UNIT-II

3.	a)	What are different types of bending losses in optical fiber?	CO2	8 Marks
	b)	An 8km optical link consists of multimode step index fiber with a core refractive index of 1.45 and relative refractive index difference of 1.2%. Estimate: i) The delay difference between the slowest and fastest modes at the fiber output. ii) The rms pulse broadening due to inter modal dispersion.	CO2	6 Marks
		(OR)		
4.	a)	Explain the pulse broadening due to inter model dispersion in different types of optical fiber.	CO3	7 Marks
	b)	Explain the intra modal dispersion effect in optical fiber.	CO2	7 Marks

UNIT-III

5.	a)	Explain the various measures of efficiency in PIN photodiode and briefly explain the working principle of PIN diode.	CO3	7 Marks
	b)	The quantum efficiency of an In GaAs PIN diode is 80% in the wave length range between 1300nm and 1600nm. Compute the range of responsivity of the PIN diode in the specified wavelength range.	CO3	7 Marks
		(OR)		
6.	a)	Explain the working of Avalanche photodiode.	CO4	7 Marks
	b)	Draw and explain the output patterns of source to fiber power launching of LED.	CO5	7 Marks

UNIT-IV

7.	a)	What is meant by equilibrium Numerical aperture? Explain.	CO5	7 Marks
	b)	Explain LED Coupling to single mode fibers.	CO6	7 Marks
		(OR)		
8.	a)	Describe lensing mechanisms to improve coupling efficiency between a source and a fiber.	CO4	7 Marks
	b)	Write about laser diode to fiber coupling.	CO5	7 Marks

UNIT-V

9.	a)	Describe the eye pattern analysis for assessing the performance of a digital fiber optical link.	CO4	7 Marks
	b)	Discuss various line codes which are used in optical links.	CO5	7 Marks
		(OR)		
10.	a)	What are the advantages of the WDM?	CO6	7 Marks
	b)	Explain the technique of insertion –loss method to measure attenuation.	CO5	7 Marks

CODE No.: 16BT60501 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

SOFTWARE TESTING

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Define Mutation Testing.	CO1	4 Marks
	b)	Compare the Boundary Value analysis with Equivalence Class Partitioning.	CO2	10 Marks
		(OR)		
2.	a)	Explain the Purpose of White Box Testing.	CO1	6 Marks
	b)	Differentiate Primary and Secondary Mutants.	CO2	8 Marks

UNIT-II

3.	a)	List and explain Error Guessing Technique.	CO1	7 Marks
	b)	Compare System Test Plan with Acceptance Test Plan.	CO2	7 Marks
		(OR)		
4.	a)	Define Black Box Testing. Explain the need for Black Box Testing.	CO1	7 Marks
	b)	Explain different types of Black Box Testing Techniques.	CO1	7 Marks

UNIT-III

5.	a)	Illustrate Software Testing Life Cycle (STLC).	CO1	7 Marks
	b)	Explain Categorization of Testing Tools.	CO4	7 Marks
		(OR)		
6.	a)	Explain Guidelines for Automated Testing.	CO4	7 Marks
	b)	Illustrate Structure of Testing Group.	CO2	7 Marks

UNIT-IV

7.	a)	Analyze Logic Coverage Criteria.	CO2	7 Marks
	b)	Explain objectives of Regression Testing.	CO2	7 Marks
		(OR)		
8.	a)	List and explain Software Testing definitions.	CO1	7 Marks
	b)	Illustrate Software Testing methodology.	CO2	7 Marks

UNIT-V

9.	a)	Narrate metrics or parameters to be considered for evaluating Software Quality.	CO5	7 Marks
	b)	Classify Software metrics.	CO2	7 Marks
		(OR)		
10.	a)	Describe Size metrics.	CO1	7 Marks
	b)	Explain Equivalence Class Testing.	CO1	7 Marks

CODE No.: 16BT60502 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

SOFT COMPUTING
[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Describe the application and scope of neural networks.	CO1	7 Marks
	b)	Differentiate between Fuzzy logic and Genetic algorithm.	CO2	7 Marks
		(OR)		
2.	a)	Illustrate the different types of hybrid systems in detail.	CO1	7 Marks
	b)	Explain the applications of soft computing.	CO3	7 Marks

UNIT-II

3.	a)	State the activation function used in perceptron network.	CO2	7 Marks
	b)	Explain the testing algorithm for back propagation network.	CO3	7 Marks
		(OR)		
4.	a)	List and explain the applications of perceptron network.	CO2	7 Marks
	b)	Describe the factors that improve the convergence of learning in back propagation network.	CO3	7 Marks

UNIT-III

5.	a)	Draw the architecture of Mexican hat and state its activation function.	CO1	7 Marks
	b)	With architecture, describe how LVQ nets are trained.	CO1	7 Marks
		(OR)		
6.	a)	With neat architecture, explain the training algorithm of Kohonen's Self-Organizing feature maps.	CO4	7 Marks
	b)	Differentiate between ART networks and CPN networks.	CO4	7 Marks

UNIT-IV

7.	a)	Discuss in detail the operations and properties of fuzzy sets.	CO5	7 Marks
	b)	List the properties of classical sets.	CO1	7 Marks
		(OR)		
8.	a)	Explain the fuzzy sets operations using Venn diagram.	CO1	7 Marks
	b)	Write short note on non-interactive fuzzy sets.	CO5	7 Marks

UNIT-V

9.	a)	How is an interval analysis obtained in fuzzy arithmetic? Explain.	CO6	7 Marks
	b)	Explain in detail the belief and plausibility measures.	CO1	7 Marks
		(OR)		
10.	a)	Describe the measures of fuzziness in detail.	CO1	7 Marks
	b)	Compare and contrast traditional algorithm and genetic algorithm.	CO2	7 Marks

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CODE No.: 16BT60503 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

WIRELESS NETWORKS
[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Describe the TDMA in detail.	CO2	7 Marks
	b)	Write short note on Wireless LAN standards.	CO1	7 Marks
		(OR)		
2.	a)	Describe the specifications of 2G PCS standards.	CO1	7 Marks
	b)	Differentiate CDMA and FDMA.	CO2	7 Marks

UNIT-II

3.	a)	Explain the Ad Hoc network topology in detail.	CO1	7 Marks
	b)	Describe the issues involved in handoff mechanism.	CO3	7 Marks
		(OR)		
4.	a)	List and explain the different cell types in the cellular hierarchy.	CO5	7 Marks
	b)	Describe the basic operation of an infrastructure network topology with neat sketch.	CO1	7 Marks

UNIT-III

5.	a)	Describe the HPNA network with an example.	CO5	7 Marks
	b)	Illustrate the general MAC frame formats of IEEE 802.11.	CO3	7 Marks
		(OR)		
6.	a)	Write short note on Hierarchical LANs.	CO2	7 Marks
	b)	Illustrate the layered protocol architecture of IEEE 802.11 in detail.	CO2	7 Marks

UNIT-IV

7.	a)	Explain the types of services provided by GSM.	CO5	7 Marks
	b)	Describe the protocol architecture for SMS.	CO1	7 Marks
		(OR)		
8.	a)	Describe the IS-95 CDMA reverse channel in detail.	CO5	7 Marks
	b)	Explain the GPRS system architecture with a neat sketch.	CO5	7 Marks

UNIT-V

9.	a)	Explain the basic architecture of a WATM network.	CO3	7 Marks
	b)	Describe the relation between logical and transport channels in HIPERLAN-2.	CO6	7 Marks
		(OR)		
10.	a)	Explain the similarities between HIPERLAN-1 and HIPERLAN-2.	CO1	7 Marks
	b)	Describe the protocol stack for Bluetooth.	CO5	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

PRINCIPLES OF PROGRAMMING LANGUAGES

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	List the potential benefits of studying concepts of programming language.	CO2	7 Marks
	b)	Give relative advantages and disadvantages of compilation and interpretation. Give examples of compiled and interpreted languages.	CO1	7 Marks
		(OR)		
2.	a)	What are dangling pointers and lost heap-dynamic variables? How are they created?	CO2	7 Marks
	b)	Describe the major problems with heap-management techniques.	CO2	7 Marks

UNIT-II

3.	a)	Discuss the benefits of operator overloading.	CO1	7 Marks
	b)	List the kinds of type conversions and explain with examples.	CO2	7 Marks
		(OR)		
4.	a)	Explain the Guarded commands.	CO1	7 Marks
	b)	Illustrate the categories of selection statements.	CO1	7 Marks

UNIT-III

5.	a)	Illustrate the design issues of sub programs and write about the overloaded subprograms.	CO3	7 Marks
	b)	Explain different types of parameter passing techniques.	CO2	7 Marks
		(OR)		
6.	a)	Compare the static local variables and stack-dynamic local variables.	CO2	7 Marks
	b)	Discuss the construct of parameterized abstract data types in Ada and C++.	CO3	7 Marks

UNIT-IV

7.	a)	Define monitor. Explain how cooperation synchronization and competition synchronization are implemented using monitors.	CO4	7 Marks
	b)	Explain exception propagation and handling in C++.	CO1	7 Marks
		(OR)		
8.	a)	How are threads different from processes? Explain java threads with examples.	CO2	7 Marks
	b)	Explain with an example, how message passing helps in concurrency control.	CO3	7 Marks

UNIT-V

9.	a)	Explain Type inferencing in ML.	CO2	7 Marks
	b)	Give an overview of logic programming and discuss its applications.	CO5	7 Marks
		(OR)		
10.	a)	Explain the basic elements of Prolog with illustrations.	CO5	7 Marks
	b)	Discuss the fundamental of functional programming language.	CO5	7 Marks

CODE No.: 16BT61001 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

ARM PROCESSORS AND PIC MICROCONTROLLERS
[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Explain the PIC18 features with neat diagram.	CO1	7 Marks
	b)	Write a program to (i) clear WREG, (ii) add 3 to WREG ten times and place the result in SFR of PORTB. Use the DECFSZ instruction to perform looping.	CO2	7 Marks

(OR)

2.	a)	i) Show the status of C, DC and Z flag after the addition of 38H AND 2FH in the following instructions. MOVLW 38H ADDLW2FH ii) Show the status of C, DC and Z flag after the addition of 9CH AND 64H in the following instructions. MOVLW 9CH ADDLW 64H.	CO2	7 Marks
	b)	Explain WREG register with MOVE and ADD instructions.	CO1	7 Marks

UNIT-II

3.	a)	Assuming that XTAL=10MHz, write a program to generate a square wave with a period of 10 ms on PORTB.3.	CO2	7 Marks
	b)	Explain the time structure for use as a counter with a suitable example program.	CO1	7 Marks

(OR)

4.	a)	Explain with neat diagram the interface of PIC18 with an RS232 connector.	CO1	7 Marks
	b)	With Fosc = 10 MHz, find the BGRP value needed to have the following baud values. i) 9600. ii) 4800. iii) 2400. iv) 1200.	CO5	7 Marks

UNIT-III

5.		Design an interfacing circuit and write a program to send characters (command/data) to the LCD without checking the busy flag and the delay between the issuing character is 5-10 ms(simple delay).	CO3	14 Marks

(OR)

6.	a)	Draw and explain the flowchart of scanning method for key press detection.	CO1	8 Marks
	b)	A PIC18 is connected to the 10MHz crystal oscillator. Calculate the conversion time for all options of ADCS bits in both ADCON0 and ADCON1 registers.	CO4	6 Marks

UNIT-IV

7.	a)	Mention the registers present in CORTEX M3 and explain the special registers.	CO2	7 Marks
	b)	List the different stages of a pipeline of an ARM CORTEX M3 processor and explain them.	CO5	7 Marks
		(OR)		
8.	a)	Explain in detail about CORTEX M3 memory map.	CO3	8 Marks
	b)	With a neat sketch, explain the basic architecture of ARM cortex M3.	CO1	6 Marks

UNIT-V

9.	a)	Explain call, unconditional and conditional branch instructions with example.	CO1	7 Marks
	b)	Write an ALP to perform multiplication of two numbers in arm mode and then switch to thumb mode to perform addition.	CO1	7 Marks
		(OR)		
10.	a)	Explain Data transfer instructions, Pseudo instructions and Data processing instructions.	CO1	7 Marks
	b)	Explain the concept of pre-indexing, auto-indexing and post indexing using suitable examples.	CO1	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

PROCESS CONTROL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	What are the process elements? Explain each.	CO1	7 Marks
	b)	Derive the mathematical expression for Gas process.	CO2	7 Marks
		(OR)		
2.	a)	Explain the mathematical model of a liquid process and mention it characteristics.	CO2	7 Marks
	b)	Explain Servo Problem with an example.	CO1	7 Marks

UNIT-II

3.	a)	Explain in detail about the Proportional and Integral mode control actions.	CO1	7 Marks
	b)	Compare the characteristics of P, PI, PD and PID control actions.	CO1	7 Marks
		(OR)		
4.	a)	Explain in detail about Pneumatic proportional controller.	CO1	7 Marks
	b)	Discuss the design issues and working of Electronic PID controller.	CO3	7 Marks

UNIT-III

5.	a)	Explain Ziegler-Nichol's tuning method of controller tuning clearly.	CO1	7 Marks
	b)	What is the meaning of controller tuning? Explain the tuning rules.	CO1	7 Marks
		(OR)		
6.	a)	Discuss the direct synthesis method in controller tuning.	CO1	7 Marks
	b)	What are the criteria for good controller? Explain the ISE, IAE and IATE.	CO1	7 Marks

UNIT-IV

7.	a)	Write briefly about different types of actuators.	CO1	7 Marks
	b)	Explain the operation of rotating shaft control valve and identify the suitable applications.	CO5	7 Marks
		(OR)		
8.	a)	Explain clearly about hydraulic actuator.	CO1	7 Marks
	b)	Write an importance of valve positioner.	CO1	7 Marks

UNIT-V

9.	a)	Explain about cascade controller with suitable example.	CO6	7 Marks
	b)	Discuss about feed forward controller with a neat diagram.	CO6	7 Marks
		(OR)		
10.	a)	Explain the working principle of distillation column.	CO1	7 Marks
	b)	Explain about split range control with a neat diagram.	CO1	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May – 2019

OPTO-ELECTRONICS AND LASER INSTRUMENTATION

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Illustrate the different types of fibers and their properties with neat sketches.	CO1	7 Marks
	b)	Define and explain the terms. i) Critical Angle. ii) Numerical Aperture. iii) Total Internal Reflection.	CO1	7 Marks
		(OR)		
2.	a)	List out the various stages of a communication system using optical fibers with a figure. Explain the function of each block in detail.	CO1	7 Marks
	b)	List and discuss the methods of coupling optical sources into optical fibers.	CO1	7 Marks

UNIT-II

3.		Describe in detail the principle of measurement of pressure and temperature using fiber optic sensors.	CO3	14 Marks
		(OR)		
4.	a)	Illustrate the arrangement and working of an optical fiber liquid level detector.	CO3	7 Marks
	b)	With a neat diagram, explain the interferometric method of measurement of length.	CO3	7 Marks

UNIT-III

5.	a)	Describe the important features of a laser beam and compare it with the features of light from an ordinary source of light.	CO1	7 Marks
	b)	Differentiate between three level and four level laser systems.	CO1	7 Marks
		(OR)		
6.	a)	What is laser tracking? With a neat diagram, explain about laser tracking.	CO3	7 Marks
	b)	Illustrate the characteristics of various types of lasers in detail.	CO1	7 Marks

UNIT-IV

7.	a)	With relevant diagrams, illustrate the benefits of lasers in material processing.	CO5	7 Marks
	b)	Explain with relevant sketches how lasers are useful in the removal of tumors in vocal cards.	CO1	7 Marks
		(OR)		
8.	a)	Explain in detail the principle of laser welding and melting.	CO5	7 Marks
	b)	Write technical notes on laser instruments for gynecology and oncology.	CO6	7 Marks

UNIT-V

9.	a)	Differentiate between electro-optic and magneto-optic modulator.	CO2	7 Marks
	b)	With neat sketches, explain about holographic interferometers.	CO1	7 Marks
		(OR)		
10.	a)	Illustrate the basic principle of holography.	CO1	7 Marks
	b)	Explain the holography for non-destructive testing.	CO5	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

AIRCRAFT INSTRUMENTATION
[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Give a brief account on modern aircraft system.	CO1	7 Marks
	b)	Give a brief account on Quantitative displays.	CO1	7 Marks
		(OR)		
2.	a)	Define the angle of attack. Differentiate between angle of attack and pitch angle.	CO1	7 Marks
	b)	Give a brief account of electronic attitude director indicator.	CO2	7 Marks

UNIT-II

3.		Discuss about atmospheric variations with altitude.	CO1	14 Marks
		(OR)		
4.		Give a brief account on pneumatic air speed indicator and temperature compensation.	CO1	14 Marks

UNIT-III

5.		Analyse the principle and working of fibre optic gyros with a neat sketch.	CO4	14 Marks
		(OR)		
6.		Discuss about conventional mechanical gyroscopes.	CO4	14 Marks

UNIT-IV

7.	a)	Describe with an appropriate diagram, the operation of optical tachometer.	CO5	7 Marks
	b)	Explain the operation of the hall effect sensor.	CO1	7 Marks
		(OR)		
8.	a)	Give a brief description about hydromechanical transducer.	CO1	7 Marks
	b)	Discuss various methods of measuring the engine shaft speed.	CO1	7 Marks

UNIT-V

9.		Give a brief description about black box.	CO1	14 Marks
		(OR)		
10.		With suitable diagrams, describe about rotating-vane flow meter.	CO1	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

PROGRAMMABLE LOGIC CONTROLLERS
[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Compare the functions of the CPU and memory sections of a PLC processor.	CO1	7 Marks
	b)	There are three machines, each with its own start-stop buttons. Only one may run at a time. Construct a circuit with appropriate interlocking.	CO2	7 Marks
		(OR)		
2.	a)	Construct Drill press operation layout and write down procedural steps to implement ladder logic.	CO1	7 Marks
	b)	Write advantages and disadvantages of PLC.	CO1	7 Marks

UNIT-II

3.	a)	Describe about output group registers scheme with neat diagram.	CO1	7 Marks
	b)	Describe the PLC timer functions and list some of the major timing functions used in circuits and processes.	CO1	7 Marks
		(OR)		
4.	a)	Explain PLC timer operation in detail with example.	CO1	7 Marks
	b)	Explain about the up/down counter with ladder logic diagram and timing diagram.	CO1	7 Marks

UNIT-III

5.	a)	Choose a suitable PLC to perform binary-to-BCD and BCD-to-binary conversion.	CO5	7 Marks
	b)	Explain a jump with return instruction process and draw the ladder logic diagram.	CO2	7 Marks
		(OR)		
6.	a)	Construct the PLC program using the ADD function for a conveyor part count. Two conveyors feed a main conveyor to make a count. The counters on each feeder conveyor are input pulsed by a proximity detector once for each part leaving the conveyors.	CO4	7 Marks
	b)	Illustrate a process requiring a jump with return instruction and draw the ladder logic diagram.	CO1	7 Marks

UNIT-IV

7.	a)	Select a suitable PLC for develop a sequencer control system to maintain constant water level in house.	CO5	7 Marks
	b)	Use matrix functions in combination to simulate combination gates such as AND and OR in PLC.	CO2	7 Marks
		(OR)		

8.	a)	Explain how Bit patterns in registers can be used in machine control.	CO1	7 Marks
	b)	Explain PLC Sequencer function.	CO1	7 Marks

UNIT-V

9.	a)	How does proportional integral process control improve control compared to proportional control only? Explain in detail.	CO2	7 Marks
	b)	Apply the analog IN PLC function operation to convert into discrete output.	CO3	7 Marks

(OR)

10.	a)	Describe PID tuning functions and methods.	CO1	7 Marks
	b)	Develop a PLC program for the problem- is to have one output go on when a certain level, 0.5 ampere, is reached, and another output on when the ampere is between 0.8 and 1.1 amperes. To accomplish this, use the input values with comparison functions.	CO6	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

CLOUD COMPUTNG

[Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Explain in detail about Taxonomy of Virtualization technologies.	CO1	7 Marks
	b)	Discuss various features of Virtual iron and Zen technologies.	CO2	7 Marks
		(OR)		
2.	a)	Define Virtualization? Illustrate the objectives of Virtualization.	CO1	7 Marks
	b)	Distinguish between VMware and Hyper-V Virtualization technologies.	CO2	7 Marks

UNIT-II

3.	a)	Define Cloud Computing? Explain its goals and benefits.	CO3	7 Marks
	b)	Explain in detail software as-a-service. Enlist and brief about various advantages and disadvantages.	CO4	7 Marks
		(OR)		
4.	a)	Explain cloud service models in detail.	CO1	7 Marks
	b)	Analyze the various risks and challenges in Cloud Computing.	CO2	7 Marks

UNIT-III

5.	a)	Differentiate Data Center and Virtualization technologies.	CO1	7 Marks
	b)	Analyze the components in Elastic Disk Provisioning Architecture.	CO1	7 Marks
		(OR)		
6.	a)	Explain in detail about Internet Service Providers.	CO4	7 Marks
	b)	Analyze the components in service load balancing and redundant storage.	CO4	7 Marks

UNIT-IV

7.	a)	Analyze various security services in cloud.	CO2	7 Marks
	b)	Demonstrate the need for recovery plan in cloud.	CO1	7 Marks
		(OR)		
8.	a)	Explain, why data security is needed in cloud.	CO2	7 Marks
	b)	Discuss disasters in the cloud.	CO1	7 Marks

UNIT-V

9.		Create SVEC college web application using MS-Azure cloud.	CO5	14 Marks
		(OR)		
10.		Discuss about MS-Azure and IBM Bluemix with cloud software environments.	CO6	14 Marks

CODE No.: 16BT61202 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

AD-HOC AND WIRELESS SENSOR NETWORKS
[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Analyze the issues that make sensor networks a special category of Ad-hoc wireless networks. Justify.	CO1	7 Marks
	b)	Discuss the applications of Ad-hoc wireless networks.	CO1	7 Marks
		(OR)		
2.	a)	State the benefits in deployment of commercial Ad-hoc wireless network when compared to wired networks.	CO1	4 Marks
	b)	Discuss busy tone multiple access (BTMA) protocol for hidden terminal problem in wireless environment.	CO2	10 Marks

UNIT-II

3.	a)	Categorize the major challenges to be emphasized in the design of routing protocols for Ad-hoc wireless network.	CO1	7 Marks
	b)	Examine Ad-hoc On-demand Distance Vector (AODV) protocol with a suitable example.	CO5	7 Marks
		(OR)		
4.	a)	Explain Bandwidth Efficient Multicast Routing Protocol (BEMRP) in Ad-hoc wireless network.	CO5	10 Marks
	b)	Outline the advantages of mesh based On-Demand Multicast Routing Protocol (ODMRP) for Ad-hoc wireless network.	CO2	4 Marks

UNIT-III

5.	a)	Compare feedback-based TCP over traditional TCP for Ad-hoc wireless networks.	CO2	7 Marks
	b)	Summarize the design goals of transport layer protocols for Ad-hoc wireless networks.	CO1	7 Marks
		(OR)		
6.	a)	Discuss the classification tree for transport layer protocols with a neat diagram.	CO1	7 Marks
	b)	Define key management. Explain the main approaches to key management.	CO4	7 Marks

UNIT-IV

7.	a)	Identify the characteristics that affect Quality of Service (QoS) provisioning in Ad-hoc wireless networks.	CO1	7 Marks
	b)	Classify Quality of Service (QoS) solutions for Ad-hoc wireless networks.	CO4	7 Marks
		(OR)		
8.	a)	Outline energy awareness needs to be adopted by the protocols at all the layers in the network protocol stack.	CO1	4 Marks
	b)	Illustrate transmission power management schemes for energy conservation in Ad-hoc wireless networks.	CO3	10 Marks

UNIT-V

9.		Summarize data gathering approaches in sensor networks : i) Direct transmission. ii) Binary scheme.	CO1	14 Marks

(OR)

10.	a)	List the applications of sensor networks.	CO1	7 Marks
	b)	Explain the quality of a sensor network and its mechanisms.	CO2	7 Marks

CODE No.: 16BT61205 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

CYBER SECURITY AND LAWS

[Mechanical Engineering, Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	What is Information Security? Describe the goals and objective of the Information Security.	CO2	7 Marks
	b)	Briefly discuss the different classifications of Cyber Crimes.	CO1	7 Marks
		(OR)		
2.	a)	Define Social Engineering? Explain different Social Engineering attacks.	CO2	7 Marks
	b)	List and discuss the different attacks planning by the Cyber Criminals.	CO1	7 Marks

UNIT-II

3.	a)	Distinguish between virus and worms with suitable examples.	CO2	7 Marks
	b)	What is meant by Steganography? Discuss how to use Steganography in Cyber World.	CO1	7 Marks
		(OR)		
4.	a)	Explain different Password Cracking techniques.	CO3	7 Marks
	b)	Explain differences between DoS and DDoS attacks.	CO2	7 Marks

UNIT-III

5.	a)	Describe and discuss the Cyber Laws in Indian context.	CO2	7 Marks
	b)	Explain different challenges and risks in Indian Law in Cyber Crime scenarios in India.	CO2	7 Marks
		(OR)		
6.	a)	What is a Digital Signatures? How to prevent Cyber Crimes using Digital Signatures.	CO1	7 Marks
	b)	Briefly discuss the different punishments used for Cyber Criminals.	CO2	7 Marks

UNIT-IV

7.	a)	How to protecting people's privacy in organizations.	CO2	7 Marks
	b)	What is meant by Social Computing? Discuss what challenges encountered in Social Computing.	CO2	7 Marks
		(OR)		
8.	a)	Explain how to handling incidents in Cyber Space.	CO2	7 Marks
	b)	What are the different guidelines are used in the Internet usage.	CO6	7 Marks

UNIT-V

9.	a)	Describe and discuss the different Intellectual Properties in the Cyber Space.	CO2	7 Marks
	b)	Explain in detail Nigerian 419 scam.	CO2	7 Marks
		(OR)		
10.	a)	Briefly discuss the bank and credit card related frauds and attacks.	CO1	7 Marks
	b)	Illustrate the Cyber Crime in Indian Banks lose millions of rupees.	CO2	7 Marks

CODE No.: 16BT61241 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

WIRELESS SENSOR NETWORKS
[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Explain the innovative mechanisms to realize the characteristic requirements of Wireless Sensor Networks.	CO1	4 Marks
	b)	Explain about energy consumption of sensor nodes in detail.	CO2	10 Marks
		(OR)		
2.	a)	Write in detail about the communication device in a Wireless Sensor Networks.	CO1	8 Marks
	b)	Explain in detail the design principles of Wireless Sensor Networks.	CO2	6 Marks

UNIT-II

3.	a)	Discuss in detail about the choice of modulation.	CO2	4 Marks
	b)	Write short notes on transceiver design characteristics.	CO3	10 Marks
		(OR)		
4.	a)	Write short notes on Modulation and Demodulation.	CO1	7 Marks
	b)	How will you stochastically capture the behavior of a Wireless Channel?	CO4	7 Marks

UNIT-III

5.	a)	List and Explain the causes and characteristics of Transmission errors.	CO2	7 Marks
	b)	Discuss about the fundamental tasks and requirements of Link Layer in detail.	CO2	7 Marks
		(OR)		
6.	a)	Explain MAC Protocols for Wireless Sensor Networks.	CO3	7 Marks
	b)	Explain about ARQ Techniques.	CO3	7 Marks

UNIT-IV

7.	a)	Explain in detail about the Geo-Cast routing protocol.	CO1	6 Marks
	b)	Explain Source-Based Tree Protocols.	CO1	8 Marks
		(OR)		
8.	a)	Write short notes on One-Shot interactions in Data Centric Routing.	CO2	8 Marks
	b)	Differentiate between energy-efficient unicast and agent-based unicast.	CO4	6 Marks

UNIT-V

9.	a)	Construct coverage of random deployments using boolean sensing model.	CO3	6 Marks
	b)	Discuss about coverage determination.	CO3	8 Marks
		(OR)		
10.	a)	Explain suitable mechanism for uniform random deployment.	CO2	7 Marks
	b)	Write a short note on sensing models.	CO3	7 Marks

CODE No.: 16BT61501 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

DATA WAREHOUSING AND DATA MINING

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Explain how the data warehouse is different from operational data.	CO1	7 Marks
	b)	List and explain OLAP operations with examples.	CO1	7 Marks
		(OR)		
2.	a)	Explain the concept of star schema used in Data Warehouse Design with an example.	CO2	7 Marks
	b)	Define cuboid. Explain about lattice of cuboids with suitable example.	CO2	7 Marks

UNIT-II

3.	a)	Discuss in detail about data mining primitives.	CO4	7 Marks
	b)	Explain about different types of data used for data mining.	CO2	7 Marks
		(OR)		
4.	a)	Why data pre-processing is needed? Explain it.	CO3	7 Marks
	b)	Explain in detail about various data cleansing techniques.	CO3	7 Marks

UNIT-III

5.	a)	Write and explain FP-Growth algorithm with a suitable example.	CO3	7 Marks
	b)	Mention and explain the metrics used in Association rule mining.	CO1	7 Marks
		(OR)		
6.	a)	How the classification is different from Prediction? Describe various prediction techniques.	CO2	7 Marks
	b)	Explain about the methods used to measure the performance of the classifier.	CO1	7 Marks

UNIT-IV

7.	a)	What is a cluster? Discuss in detail partition-based clustering techniques.	CO4	7 Marks
	b)	Describe nominal and ordinal attributes with examples.	CO4	7 Marks
		(OR)		
8.	a)	Compare and contrast Agglomerative and Divisive clustering.	CO5	7 Marks
	b)	Discuss the design issues of exception handling.	CO3	7 Marks

UNIT-V

9.		Write short notes on: i) Spatial Data mining. ii) Web data mining.	CO4	14 Marks
		(OR)		
10.		Discuss in detail about data mining trends.	CO6	14 Marks

CODE No.: 16BT61502 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

NETWORK SECURITY

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I		
1.		Deduce the types of attacks to which information is typically subjected in CNS.	CO1	14 Marks
		(OR)		
2.	a)	Explain the Security Services and mechanisms to achieve them.	CO2	7 Marks
	b)	Explain the Sniffing Switch networks.	CO1	7 Marks
		UNIT-II		
3.	a)	List and explain commonly used firewalls from threats of security.	CO4	7 Marks
	b)	List out various standard VPN techniques.	CO3	7 Marks
		(OR)		
4.	a)	Demonstrate the three common types of firewalls with diagrams.	CO4	7 Marks
	b)	Analyze how screened host architecture for firewalls differ from screened subnet firewall architecture.	CO2 CO4	7 Marks
		UNIT-III		
5.	a)	Formulate the single round of DES algorithm.	CO3	7 Marks
	b)	With an example, explain Blum-Blum-Shub Random number generation	CO3	7 Marks
		(OR)		
6.	a)	Explain the substitution bytes transformation and key generation process of AES cipher	CO3	7 Marks
	b)	Design the key generation process of DES.	CO3	7 Marks
		UNIT-IV		
7.	a)	Discuss about the objectives of HMAC and its security features.	CO4	7 Marks
	b)	Express how signing and verification is done using DSS.	CO5	7 Marks
		(OR)		
8.	a)	Explain in detail El Gamal Public key cryptosystems with an example.	CO4	7 Marks
	b)	User A and B use Diffie-Hellman key exchange a common prime q=71 and a primitive root a=7. Calculate the following. If user A has private key XA=5, what is A's public key YA. If user A has private key XB=12, what is B's public key YB and what is shared secret key?	CO3	7 Marks
		UNIT-V		
9.	a)	Illustrate the various measures that may be used for intrusion detection.	CO5	7 Marks
	b)	Estimate the virus related threats and the counter measures.	CO5	7 Marks
		(OR)		
10.	a)	Discuss the role of intrusion detection system. What are the three benefits that can be provided by the intrusion detection system?	CO5	7 Marks
	b)	Explain the Trojan Horse Defense in trusted system.	CO5	7 Marks

CODE No.: 16BT70505 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

HUMAN COMPUTER INTERACTION

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Is good design important? Explain the benefits of good design.	CO1	7 Marks
	b)	Discuss the characteristics suggested by Shneiderman for direct manipulation systems.	CO1	7 Marks
		(OR)		
2.	a)	Discuss about the evolution of screen design.	CO3	7 Marks
	b)	Explain the advantages and disadvantages of Graphical systems.	CO1	7 Marks

UNIT-II

3.	a)	Discuss the importance of human characteristics which have influence on interface and screen design.	CO2	7 Marks
	b)	How to present information simply and meaningfully? Explain in detail.	CO3	7 Marks
		(OR)		
4.	a)	Describe the scanning guidelines and browsing guidelines of information retrieval on web.	CO2	7 Marks
	b)	Discuss different human considerations in detail.	CO2	7 Marks

UNIT-III

5.	a)	List and discuss the qualities that provide visually pleasing composition for screen.	CO3	7 Marks
	b)	Explain in detail about the screen design goals.	CO3	7 Marks
		(OR)		
6.	a)	How to arrange screen elements? Discuss in detail.	CO3	7 Marks
	b)	Explain the technological considerations in interface design.	CO3	7 Marks

UNIT-IV

7.	a)	Classify the structures of menus. Give suitable examples.	CO4	7 Marks
	b)	Explain in brief about creating meaningful graphics, icons and images.	CO4	7 Marks
		(OR)		
8.	a)	Explain in brief selection of screen based controls.	CO5	7 Marks
	b)	Discuss about the problems with the colors and choosing colors.	CO4	7 Marks

UNIT-V

9.	a)	Explain the Speech and Auditory Interfaces.	CO6	10 Marks
	b)	Explain different keyboards in detail.	CO5	4 Marks
		(OR)		
10.	a)	Describe in detail about various kinds of keyboard layouts.	CO6	10 Marks
	b)	Explain different keypads for small devices in detail.	CO5	4 Marks

CODE No.: 16BT71205 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Regular Examinations May - 2019

CRYPTOGRAPHY AND NETWORK SECURITY

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Explain OSI Security Architecture services and mechanisms.	CO1	7 Marks
	b)	Using Hill Cipher to encipher the message "we live in a secure world". Use the key $\begin{bmatrix} 3 & 2 \\ 5 & 7 \end{bmatrix}$.	CO4	7 Marks
		(OR)		
2.	a)	Explain about Transposition techniques.	CO1	7 Marks
	b)	Encrypt the following using Playfair cipher using the keyword MONARCHY. "SWARAJ IS MY BIRTH RIGHT". Use X for Blank spaces.	CO1	7 Marks

UNIT-II

3.	a)	Explain the block cipher modes of operation.	CO2	7 Marks
	b)	Briefly explain DES (Data Encryption Standard) with neat sketches.	CO2	7 Marks
		(OR)		
4.	a)	Explain the principles of Public-Key Crypto Systems.	CO1	7 Marks
	b)	Given p=19, q=23, and e=3. Use RSA algorithm to find n, $\Phi(n)$ and d.	CO2	7 Marks

UNIT-III

5.	a)	What is message authentication? What are the requirements of message authentication?	CO2	7 Marks
	b)	Define Hash function and explain different ways hash code can be used to provide message authentication.	CO2	7 Marks
		(OR)		
6.	a)	Illustrate Secure Hash Algorithm in brief.	CO1	7 Marks
	b)	Explain the difference between Kerberos Ver. 4 and Kerberos Ver. 5.	CO1	7 Marks

UNIT-IV

7.	a)	Discuss the operational description of PGP.	CO4	7 Marks
	b)	Apply Secure Electronic Transaction (SET) for online purchase.	CO3	7 Marks
		(OR)		
8.	a)	Describe the Architecture of IPSec.	CO2	7 Marks
	b)	Why does PGP compress the message? What are the reasons for compressing the signature but before encryption?	CO2	7 Marks

UNIT-V

9.	a)	Explain in detail about password selection strategies.	CO1	7 Marks
	b)	Write about intrusion detection.	CO2	7 Marks
		(OR)		
10.	a)	Explain about Phishing and Identity Theft.	CO2	7 Marks
	b)	Write about Denial of Service attacks.	CO1	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2019

FINITE ELEMENT METHODS

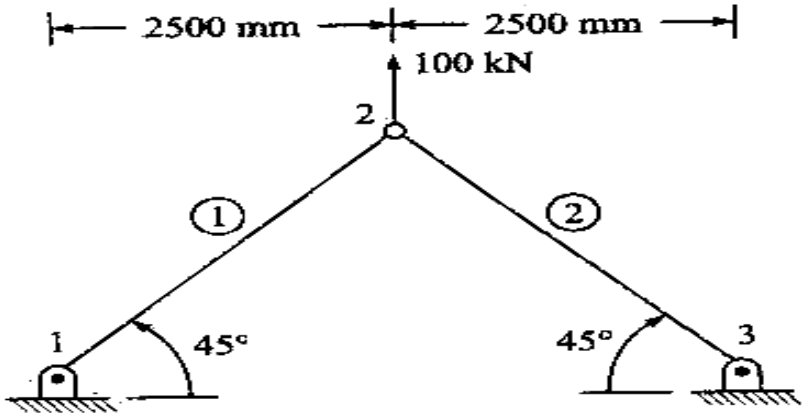
[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

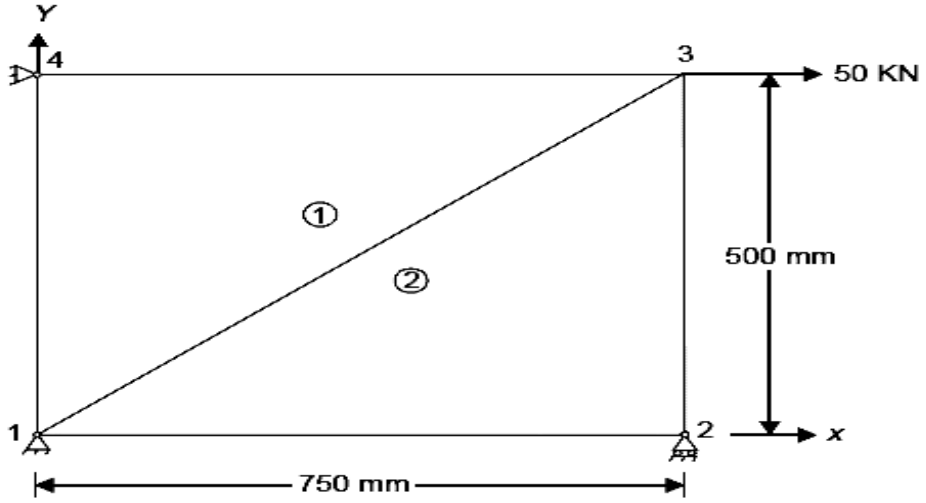
1. a) List and explain the advantages of FEM.
b) In a plane stress problem, σ_x = 1000MPa, σ_y = -150MPa, E = 200GPa and ν = 0.3. Determine the value of strains ε_x, ε_y and ε_z.

2. For the plane truss structure shown in figure, determine the displacement of node 2 and stress in the element 1. Assume E=200GPa, and A=2000mm².



3. A cantilever beam of length 3.4m has an elastic spring support of stiffness 230kN/m at its free end, where a point load of 13kN acts. Take Young's modulus as 200GPa and area moment of inertia of the cross-section as 1 x 10^{-4} m^4. Determine the displacement and slope at the node and reactions.

4. Find the nodal displacement and element stresses in the propped beam shown in figure. Idealize the beam into two CST elements as shown in figure. Assume plane stress condition. Take Poisson's ratio = 0.25 and Young's modulus = 2 x 10^5 N/mm², Thickness = 15mm.



5. A long cylinder of inside diameter 80mm and outside diameter 120mm fits in a hole over its full length. The cylinder is then subjected to an internal pressure of 2MPa. Using two elements on the 10mm length, find the displacements at the inner radius. E = 200GPa and $\mu = 0.3$**.**

6. Derive the element conduction matrix and equations for a two dimensional heat-transfer problem.

7. Explain the basic differential equations for fluid flow problems, its one dimensional formulation and corresponding finite element equations and also method of solving by taking a suitable example.

8. Derive the consistent mass matrix for the beam element and CST element.

CODE No.:10BT70502 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2019

SOFTWARE TESTING TECHNIQUES

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What is the purpose of Software testing?
b) How Bugs Taxonomy is used in Software testing?

2. a) Explain the difference between Achievable and Unachievable paths.
b) What is Path Sensitizing? Explain with an example.

3. Explain the Transaction Flow testing with an Example.

4. What is Domain testing? Explain different strategies used in Domain Testing.

5. a) Explain about mean processing time of a routine with an example.
b) Explain about the limitations and solutions of applications.

6. What is Logic Based testing? How Karnaugh-Veitch (KV) charts are used in Logic Based Testing?

7. a) What are graph matrices and their applications?
b) Write about testing an application using QTP.

8. Explain about testing an application using Win Runner and QTP in detail.

CODE No.:10BT71201 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2019

WEB PROGRAMMING

[Computer Science and Engineering, Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. Explain the following tags with an example for :
i) Image tag. ii) Hyperlink tag. iii) Float attribute. iv) Table tag.

2. a) How is programming made easier in Java script? Also mention the benefits and problems with Java script.
b) Explain the mathematical functions in java script.

3. What is XML? Explain the XML validation process with DTD.

4. a) Explain the lifecycle of *servlets* with the help of a neat sketch.
b) What is a cookie? Explain the process of creating and storing a cookie.

5. What is a Database Driver? Explain Type 3 driver in detail.

6. a) Explain about Page directive and Scripting Elements.
b) Design a Scriplet for a counter button and displays the result.

7. What is a JavaBean and how do you declare in JSP page?

8. Explain about Function tag libraries.

CODE No.:10BT71203 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2019

MULTIMEDIA AND APPLICATIONS DEVELOPMENT

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) What are the different types of image data types? Explain.
b) Explain various image and video color models.

2. Discuss the effect of sampling and quantization and Signal to Quantization Noise Ratio on quality of signals.

3. Illustrate different types of constructor functions in action script 2.0.

4. a) Explain about Package in detail. Give example.
b) Explain about exceptions.

5. Write an Action Script program for Currency Converter Application.

6. a) What do you mean by Compression and Quantization?
b) Explain Transform coding using DCT.

7. a) What are the main differences between MPEG-1 and MPEG-2 ?
b) Explain Video Compression based on motion compensation.

8. What are the various factors on which QoS for multimedia data transmission depends? Explain.

CODE No.:10BT71501 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations June - 2019

NETWORK PROGRAMMING

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss TCP connection establishment and termination in detail.
b) Give a brief note on Unix standards.

2. Explain various elementary TCP socket functions.

3. a) After starting client - server, if the child process is killed at the server, explain in steps what happens to client.
b) Explain TCP Echo server and client with standard I/O library and other functions.

4. a) Explain IPV6 socket options.
b) What are the various I/O models?

5. a) Explain elementary UDP sockets.
b) Write the similarities between TCP socket, UDP socket and raw socket.

6. a) Define Resolvers and Name servers and explain the use of RES_USE_INET6 resolver option.
b) Explain the use of uname function with an example.

7. Explain the concept of IPC using pipes.

8. a) Describe 'rlogin'.
b) What are the various terminal modes?

CODE No.:10BT40502 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations November - 2018

OBJECT ORIENTED PROGRAMMING

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the OOPS concepts.
b) What is a constructor?

2. a) Explain the different polymorphism techniques in C++.
b) Explain virtual base class and function overriding.

3. a) Write a simple program to generate prime numbers between 1 and 100 in Java.
b) Explain recursion with a simple program in Java.

4. a) Write a program to create interface A in this interface we have two method meth1 and meth2. Implements this interface in another class name MyClass.
b) Create an outer class with a function display, again create another class inside the outer class named inner with a function called display and call the two functions in the main class.

5. a) What is a CLASSPATH? How can you import a package?
b) Briefly explain the concepts and benefits of exception handling in Java.

6. a) Write a program to show how to create a child frame window from within an applet.
b) Define the term event. Describes the roles of sources and listeners.

7. a) What is an event? Write any five events.
b) Write briefly about inner class.

8. Explain JApplet with a sample program.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations November - 2018

REMOTE SENSING AND GIS

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the concept of stereoscopic measurement.
b) Uses of Photogrammetry.
c) Calculate the height of a lamp post for which parallax is 30mm. Consider flying height 1200m, air base 600m and focal length 0.1524 mm.

2. a) What are the essential components of Remote sensing system?
b) What are the advantages and disadvantages of using remote sensing system?

3. a) Write the orbital and sensor characteristics of any Indian Satellite.
b) What is Spectral Signature? Discuss the Spectral Reflectance Characteristics of Water Bodies.

4. Write short notes on
i) Components of GIS
ii) Spatial data and attribute data
iii) Uses of GIS.

5. a) Define Data Structure? Explain in detail the types of data structures.
b) What is map projection? What is the map projection used in the preparation of Toposheets by SOI?

6. a) Describe vector Overlay with examples. What is a metadata? Mention its role in GIS?
b) Explain the terms Vector data storage and attribute data storage.

7. How Remote Sensing and GIS can help in optimal use of Surface Water in Nellore District for Irrigation and Drinking? Explain.

8. Discuss the role of remote sensing and GIS in the identification of sites for Artificial recharge structures?

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CODE No.:10BT71201 **SVEC-10**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations November - 2018

WEB PROGRAMMING

[Computer Science and Engineering, Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain how you would create an Ordered List.
b) Discuss the advantages of CSS.

2. a) Write a Java script program to generate multiplication tables within a range numbers.
b) How is string manipulation done in Java script?

3. Briefly explain DOM and SAX XML Parsers with examples.

4. a) Explain the lifecycle of Servlets with the help of a neat sketch.
b) What is a cookie? Explain the process of creating and storing a cookie.

5. a) Explain the classes of java.sql package.
b) Explain the process of creating and executing SQL statements querying the database.

6. Design a JSP page with action elements for Student Registration form.

7. a) What are JSP tag extensions?
b) Explain getter and setter methods with examples.

8. Construct a JSP page with JSPTL integration and mention its advantages.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations November - 2018

MULTIMEDIA AND APPLICATIONS DEVELOPMENT

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions

All questions carry equal marks

1. a) What is multimedia? Discuss various Graphics and Image editing tools.
b) Explain different types of image file formats.

2. a) What is MIDI? Explain MIDI messages in-detail.
b) Describe the following:
i) Chroma Sub-sampling
ii) NTSC Video Standard.

3. Explain various compatible types and casting of ActionScript.

4. Explain handling multiple types of exceptions.

5. Explain OOP action development using components of ActionScript 2.0.

6. a) What is a Compression? Explain Run Length Coding with suitable example.
b) Write short notes on Transform coding.

7. a) What is predictive coding?
b) Discuss the main steps in JPEG 2000 Compression.

8. What are the various factors on which QoS for multimedia data transmission depends? Explain.

CODE No.:10BT71204 SVEC-10

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC10) Supplementary Examinations November - 2018

CRYPTOGRAPHY AND NETWORK SECURITY

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss about buffer overflow attacks in detail.
b) List and define Conventional encryption principles.

2. a) With neat illustration explain Advanced Encryption Standard algorithm (AES).
b) Explain the importance of Secure Hash functions with relevant examples.

3. a) What are the requirements and applications of public key cryptography?
b) Write short notes on digital certificates.

4. a) Discuss the popular phenomenon for securing your e-mail.
b) Make a table to compare and contrast cryptographic algorithms used in PGP and S/MIME.

5. Explain the architecture of IP Security.

6. Describe how brute-force attack and man-in-the-middle attack can be counted by SSL.

7. a) Explain about Statistical Anomaly Detection.
b) Explain about DDOS Attacks.

8. a) Explain the characteristics of a good firewall implementation.
b) What is a Trojan horse defence?

CODE No.:10BT71208

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations November - 2018

SOFTWARE PROJECT MANAGEMENT

[Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) How are the expenditure of a conventional Software project distributed across various activities? Explain with an example.
b) "*A serious issue associated with the waterfall life cycle was the lack of early risk resolution*" - Do you agree this? Justify.

2. a) Describe all the Software project staffing principles suggested by Boehm.
b) Define coupling and cohesion. Explain with examples.

3. a) Explain Inception phase and Elaboration phase of life-cycle process.
b) Describe the following artifact sets.
i) Requirements Set ii) Design Set

4. a) What are the seven workflows in the life cycle?
b) What levels of activity take place in these workflows during each of the four phases?

5. a) Discuss about Work breakdown structures.
b) Explain about software process workflows.

6. Discuss about project organizations and responsibilities.

7. a) Why are the metrics divided into management and quality indicators? Name the core metrics under each category.
b) Identify examples of each of the seven core metrics and state their purpose.

8. Explain about modern project profiles in next generation software economics.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations November - 2018

NETWORK PROGRAMMING

[Computer Science and Engineering, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain about UDP.
b) Explain the protocol usage by common internet application.

2. a) Give a note on byte ordering functions.
b) Discuss elementary socket functions in detail.

3. Explain the following scenario of server operations:

i) Crashing of server host
ii) Crashing and rebooting of server host
iii) Shutdown of server host

4. a) Explain 'getsockopt' and 'setsockopt' function.
b) Explain IPV6 socket options.

5. Briefly discuss about UDP Echo server and client.

6. Explain 'gethost by name' and 'uname' functions in detail along with examples.

7. a) Briefly discuss about the system V IPC mechanisms.
b) Give an example application where FIFO can be used.

8. Write a short note on the following:
i) rlogin ii) RPC

CODE No.:14BT6HS01 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

BANKING AND INSURANCE

[Civil Engineering, Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Explain the concept of banking and its functions. 14 Marks

(OR)

2 Describe the monetary policy of RBI. 14 Marks

UNIT-II

3 Explain how Debtor-Creditor relationship is important in banking system? 14 Marks

(OR)

4 What are the underlying principles of "Lending"? And list out and explain different types of loans in the banking system. 14 Marks

UNIT-III

5 What are the features of e-payment system? Discuss the various types of e-payments. 14 Marks

(OR)

6 What is a Credit Card? Explain features of Credit card and Debit card. 14 Marks

UNIT-IV

7 "Insurance is a risk management tool". Explain. 14 Marks

(OR)

8 Explain the concept of risks associated in Insurance with appropriate examples. 14 Marks

UNIT-V

9 Give a brief note on different types of insurance products and services available in India. 14 Marks

(OR)

10 What do you mean by Insurance penetration? How can IRDA protect the interest of insurance policyholders in India? 14 Marks

CODE No.:14BT41501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

COMPUTER GRAPHICS

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Differentiate between Raster Scan and Random Scan Systems.	7 Marks
	b)	Analyze the flood fill algorithm for a circular object with an example.	7 Marks
		(OR)	
2	a)	Consider the line from (0, 0) to (5, 5). Rasterize the line using Bresenhams drawing algorithm.	7 Marks
	b)	List any 4 applications of Computer Graphics.	7 Marks

UNIT-II

3	a)	Derive the rotation matrix with respect to fix point **Q**(***h***, ***k***).	9 Marks
	b)	Show that two dimensional scaling and rotation do not commutative under what condition they are commutative.	5 Marks
		(OR)	
4	a)	Describe Cohen-Sutherland algorithm with suitable example.	7 Marks
	b)	Derive Two Dimensional Viewing transformations.	7 Marks

UNIT-III

5	a)	Analyze the properties of Bezier curves.	7 Marks
	b)	Discuss in detail about Polygon surfaces in detail.	7 Marks
		(OR)	
6	a)	In how many ways Splines could be represented, show illustrations.	7 Marks
	b)	Illustrate Hermite Curve Continuity Techniques.	7 Marks

UNIT-IV

7	a)	Discuss in detail rotation in 3D transformations.	7 Marks
	b)	Derive a transformation matrix to transform from world coordinates to viewing coordinates in 3D.	7 Marks
		(OR)	
8	a)	Illustrate the process of general parallel projection transformation.	7 Marks
	b)	Write short notes on clipping in 3D.	7 Marks

UNIT-V

9	a)	Analyze Back-face detection method in visible surface detection methods.	7 Marks
	b)	Examine the purpose Scan-line algorithm.	7 Marks
		(OR)	
10		Demonstrate different shading methods in visible surface detection methods	14 Marks

CODE No.:14BT51201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

COMPUTER NETWORKS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Illustrate Protocol Hierarchies and Design issues of the Layers.	9 Marks
	b)	Describe 3G Mobile phone networks.	5 Marks
		(OR)	
2	a)	Explain OSI Reference Model in detail.	9 Marks
	b)	Write short notes on Twisted Pair.	5 Marks

UNIT-II

3	a)	Explain Elementary Data link Protocols.	9 Marks
	b)	Write short notes on Ethernet.	5 Marks
		(OR)	
4	a)	Explain Selective Repeat Sliding window Protocol.	9 Marks
	b)	Describe channel allocation Problem.	5 Marks

UNIT-III

5	a)	Explain any static routing algorithm.	5 Marks
	b)	Describe congestion control algorithms.	9 Marks
		(OR)	
6	a)	Write short notes on Quality of Service.	5 Marks
	b)	Illustrate Distance Vector Routing algorithm with relevant figures.	9 Marks

UNIT-IV

7	a)	Describe about the services provided by the transport layer to the network layer.	6 Marks
	b)	Define RPC. Explain the mechanism of RPC and RTCP in detail.	8 Marks
		(OR)	
8	a)	Explain the purpose of TCP and UDP in detail.	6 Marks
	b)	List out the methods used to avoid congestion in transport layer.	8 Marks

UNIT-V

9	a)	Give the architectural overview of World Wide Web, HTTP and HTML.	8 Marks
	b)	Write Short notes on i) Explain SMTP. ii) Explain the five new message headers defined by MIME.	6 Marks
		(OR)	
10	a)	Define Message Digest. Describe about digital signature with an example.	8 Marks
	b)	Briefly explain about IP security and email security.	6 Marks

CODE No.:14BT51201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations, November 2018

COMPUTER NETWORKS

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write short notes on uses of Computer Networks.	5 Marks
	b)	Explain TCP/IP Reference Model in detail.	9 Marks
		(OR)	
2	a)	Explain Network Hardware with relevant figures.	9 Marks
	b)	Describe Wireless Transmission.	5 Marks

UNIT-II

3	a)	Narrate the significance of various fields present in Ethernet frame.	6 Marks
	b)	Explain about the working of sliding window protocols with timeline diagrams.	8 Marks
		(OR)	
4	a)	Explain following multiple Access method. i) Slotted ALOHA; ii) CSMA / CD.	6 Marks
	b)	Consider a 4 bit generator G=1001, and data D=101110. What is the value of R during the calculation of CRC?	8 Marks

UNIT-III

5	a)	Discuss in detail about the Virtual circuits and datagram network. Compare Virtual Circuits and Data grams networks.	6 Marks
	b)	Explain the concept of classful IP addresses and subnet masking in network layer.	8 Marks
		(OR)	
6	a)	Explain how routing tables are constructed using distance vector algorithm with respect to the given graph of the network.	8 Marks
	b)	Explain in detail about the general structure of the IPv6 Packet.	6 Marks

UNIT-IV

7	a)	What are the services the transport layer provides? Discuss each in detail with the suitable example.	8 Marks
	b)	Explain various fields in TCP header and UDP header with neat diagram.	6 Marks
		(OR)	
8	a)	Explain connection establishment in Transport Protocol.	8 Marks
	b)	When does TCP trigger packet retransmission? Explain.	6 Marks

UNIT-V

9	a)	Explain Domain Name System.	9 Marks
	b)	Write short notes on Dynamic web documents.	5 Marks
		(OR)	
10	a)	Explain substitution techniques.	7 Marks
	b)	Describe one-time pads.	7 Marks

CODE No.:14BT51501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations, November 2018

OPERATING SYSTEMS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the five major activities of an operating system with regard to file management?	7 Marks
	b)	In what ways is the modular kernel approach similar to the layered approach? In what ways does it differ from the layered approach?	7 Marks
		(OR)	
2	a)	Describe the differences among short-term, medium-term, and long term scheduling.	7 Marks
	b)	How benefits are categorized in multithreaded programming?	7 Marks

UNIT-II

3	a)	Show that the two-phase locking protocol ensures conflict serializability?	7 Marks
	b)	Consider a system consisting of processes Pi, Pi,..., *P,,,* each of which has a unique priority number. Write a monitor that allocates three identical line printers to these processes, using the priority numbers for deciding the order of allocation?	7 Marks
		(OR)	
4	a)	What is the optimistic assumption made in the deadlock-detection algorithm? How could this assumption be violated?	7 Marks
	b)	Compare the circular-wait scheme with the various deadlock-avoidance schemes (like the banker's algorithm) with respect to the following issues: i) Runtime overheads; ii) System throughput.	7 Marks

UNIT-III

5	a)	Explain the basic concepts of segmentation.	7 Marks
	b)	Write about the performance of demand paging.	7 Marks
		(OR)	
6	a)	Consider the following page-reference string: 1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6 How many page faults would occur for LRU page replacement algorithms, assuming two, three frames?	7 Marks
	b)	What is thrashing and explain the methods to avoid thrashing?	7 Marks

UNIT-IV

7	a)	Write briefly about file attributes, operations, types and structure.	7 Marks
	b)	Discuss in detail about any two file allocation methods.	7 Marks
		(OR)	
8	a)	Explain about any two disk scheduling with suitable example.	7 Marks
	b)	Describe briefly about disk structure.	7 Marks

UNIT-V

9	a)	Write a short note on: i) Polling; ii) Interrupts.	7 Marks
	b)	Explicate direct memory access.	7 Marks
		(OR)	
10		Illustrate with an example about implementation of access matrix.	14 Marks

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CODE No.:14BT60206 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

ADVANCED CONTROL SYSTEMS

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Consider a unity feedback system with open loop transfer function $G(s) = \frac{k}{S(1+S)(3+S)}$; design a suitable compensator by using Bode plot method, so that the compensated system has K_v = 10 sec^{-1} ,Phase margin = 40^0, Gain margin ≤ 12 db. 14 Marks

(OR)

2 a) Explain Tuning rules for PID controllers. 7 Marks

b) Explain about two-degree-of-freedom control. 7 Marks

UNIT-II

3 a) Describe the saturation and backlash non-linearities with a neat diagram. 6 Marks

b) Obtain a phase plane portrait of the system given by $\ddot{X} + \dot{X} + |X| = 0$. 8 Marks

(OR)

4 a) Explain the behavior of non-linear system with examples. 8 Marks

b) The response of a system is $y = bx + C\frac{dx}{dt}$. Test whether the system is linear or non- linear. 6 Marks

UNIT-III

5 a) Discuss in detail direct method of Lyapunov for the linear continuous time autonomous system? 7 Marks

b) A non-linear system described by the following equations 7 Marks

$$\dot{x}_1 = -x_1 + 2x_2$$

$$\dot{x}_2 = 3x_1 - x_2 - x_2^3$$

Observe the stability of equilibrium state.

(OR)

6 a) State and prove Lyapunov stability theorem. 6 Marks

b) Test the stability of the following system by using variable gradient method. 8 Marks

$$\dot{x}_1 = -2x_1 + 3x_1^2x_2$$

$$\dot{x}_2 = -4x_2$$

UNIT-IV

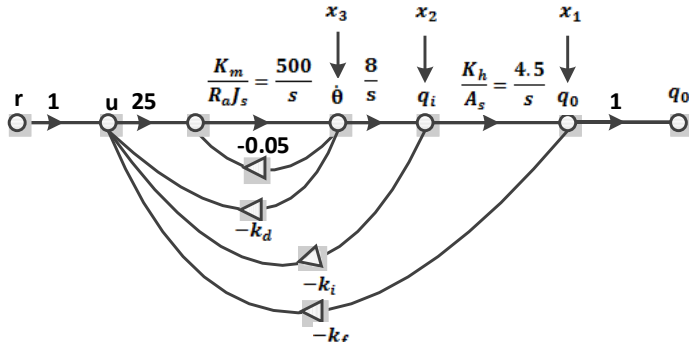
7 a) What is the necessity of pole placement? 4 Marks

b) Explain the design procedure by pole placement. 5 Marks

c) Explain necessary and sufficient conditions for arbitrary pole placement. 5 Marks

(OR)

8 Consider the system whose signal flow graph is shown in figure below. Adjust the feedback gains for the system poles to be so placed that it has damping ratio $\zeta = 0.8$ and settling time $t_{ss} = 0.1$ sec. 14 Marks



UNIT-V

9 Obtain the control law which minimizes the performance index $J = \int_0^{\infty} (x_1^2 \_ u^2)\,dt$ for the system $\dot{X} = \begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix} x + \begin{bmatrix} 0 \\ 1 \end{bmatrix} u$. 14 Marks

(OR)

10 a) What is a functional? Explain with examples. 5 Marks

b) Find the optimal control for the following problem using calculus of variations 9 Marks

$$\dot{x} = -x + u$$

$$(x(0) = x^0)$$

$$x(2) = x^1$$

to minimize $J = \int_0^2 (x_1^2 + u^2)\,dt$.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

DIGITAL SIGNAL PROCESSING

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Consider a discrete-time system with input $x(n)$ and output $y(n)$ related by $y(n) = \sum_{k=n-n_0}^{n+n_0} x(k)$ where n_0 is positive integer. 8 Marks

i) Is the system linear?
ii) Is this system time-invariant?
iii) If x(n) is known to be bounded by a finite integer B_x, it can be shown that y(n) is bounded by a finite number C. We conclude that the given system is stable. Express C in terms of B_x and n_0.

b) Determine the response $y(n)$, $n \geq 0$ of the system described by the second order difference equation, $y(n) - 0.2y(n-1) - 0.03y(n-2) = x(n) + 0.4x(n-1)$, Where the input signal is $x(n) = 0.2^n u(n)$ and with initial conditions $y(-2) = 0$, $y(-1) = 0.5$. 6 Marks

(OR)

2 a) The following system have input $x(n)$ and output $y(n)$. Determine whether it is memory less, stable, causal, linear, time-invariant or not $y(n) = \text{sgn}[x(n)]$. 7 Marks

b) Determine the range of values of "p" and "q" for the stability of LTI system with impulse response $h(n) = p^n; n < 0$ $= q^n; n \geq 0$. 7 Marks

UNIT-II

3 a) An 8-point sequence is given by $x[n]=\{2, 2, 2, 2, 1, 1, 1, 1\}$. Find the DFT of the sequence using direct computation. 7 Marks

b) Develop the DIT F FFT algorithm with neat sketch for $N = 8$. 7 Marks

(OR)

4 a) State and prove convolution property of DFT frequency domain. 7 Marks

b) An 8-point sequence is given by $x(n) = \{1, 3, 4, 4, 3, 2, 1, 1\}$. Compute 8-point DFT of $x(n)$ using DIF FFT. 7 Marks

UNIT-III

5 a) Explain about Frequency warping effect and suggest a remedy for it. 7 Marks

b) For the given analog transfer function $H_a(s) = 3/(s+1)(s+4)$. Determine $H(z)$ for $T = 1$sec using impulse invariant method. 7 Marks

(OR)

6 a) Compare the characteristics of Butterworth and Chebyshev filters. 7 Marks

b) Obtain the cascade and parallel form structures for the following systems described by the following difference equation: 7 Marks
$y(n) = -0.1\, y(n-1) - 0.72\, y(n-2) + 0.7\, x(n) + 0.252\, x(n-2)$.

UNIT-IV

7 a) Using a rectangular window design an LPF with pass band gain of unity, cut-off frequency of 1000Hz, and working at a sampling frequency of 5KHz. Take the length of the impulse response as 7. 9 Marks

b) Discuss the design steps involved in designing FIR filters using windowing techniques. 5 Marks

(OR)

8 a) Consider the causal linear time invariant system with system function shown below. Draw the direct form, and transpose direct form representation of the system and compare. $H = 1 - \frac{1}{3}z^{-1} + \frac{1}{6}z^{-2} + z^{-3}$. 7 Marks

b) The desired frequency response of a HPF is given below. Design a linear phase FIR filter using Hamming window for M=7 and ω_c=2 rad / sample. 7 Marks

$$H_d(e^{j\omega}) = \begin{cases} e^{-j3\omega} & \text{for } \omega_c \le |\omega| \le \pi \\ 0 & \text{for } \omega \le \omega_c \end{cases}$$

UNIT-V

9 a) Explain in detail about MAC and Barrel shifter. 7 Marks

b) What is meant by bit reversal address mode? Write the applications for which this addressing mode is preferred. 7 Marks

(OR)

10 a) Discuss about multiple access memory and multiported memory. 7 Marks

b) Explain the features of 'C6X processes. 7 Marks

CODE No.:14BT60403 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations, November 2018

VLSI DESIGN

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Design an inverter with NMOS technology in different forms of pull up elements. Draw its voltage transfer characteristics.	7 Marks
	b)	Design an inverter with BiCMOS technology. Give advantages of BiCMOS inverter as compared to CMOS inverter.	7 Marks
		(OR)	
2	a)	Describe operation of n-channel MOSFET in enhancement mode and depletion mode. Draw its characteristics.	7 Marks
	b)	Elucidate the steps involved in NMOS fabrication with neat sketches.	7 Marks

UNIT-II

3	a)	Sketch the Stick diagram for 2-input NOR gate using CMOS.	7 Marks
	b)	Explain the Inverter delays for NMOS and CMOS.	7 Marks
		(OR)	
4	a)	Sketch the Layout for NMOS Inverter.	8 Marks
	b)	Explain about Area Capacitance.	6 Marks

UNIT-III

5	a)	Design sum and carry expressions of carry look ahead adder using NMOS logic.	8 Marks
	b)	Explain Parity generator.	6 Marks
		(OR)	
6	a)	Draw and Explain Booth Multiplier.	8 Marks
	b)	Explain LFSR.	6 Marks

UNIT-IV

7	a)	Explain the memory cell read and write operation of 6T SRAM with neat sketches.	8 Marks
	b)	Explain the read and write operations of 3T DRAM memory cell.	6 Marks
		(OR)	
8	a)	Draw and explain the architecture of FPGA and its Applications.	10 Marks
	b)	Compare FPGA and CPLD.	4 Marks

UNIT-V

9	a)	What are the roles of design capture tools to create SoC in FPGA?	7 Marks
	b)	How to verify the functionality of the CMOS inverter using different design verification tools.	7 Marks
		(OR)	
10	a)	Describe the advantages and disadvantages of the boundary scan technique.	7 Marks
	b)	Write short notes on i) Ad hoc testing; ii) Built-In Self-Test (BIST).	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations, November 2018

PRINCIPLES OF COMMUNICATION

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Find the Fourier transform for the following signals 10 Marks
i) $u(t)$; ii) $\text{sgn}(t)$; iii) $\cos(w_o t)$; iv) $\sin(w_o t)$; v) 1.

b) Write the properties of Auto Correlation. 4 Marks

(OR)

2 a) Explain the block diagram of electronic communication system in detail. 8 Marks

b) Write the properties of power spectral density and obtain the relation between Auto Correlation and Power Spectral Density. 6 Marks

UNIT-II

3 a) A carrier signal $\boldsymbol{c(t) = 4\cos(10000\pi t)}$ is amplitude modulated with a modulating signal $\boldsymbol{m(t) = 2\cos(1200\pi t)}$. Calculate the transmitted power for each of the following cases and comment on the results: 5 Marks
i) If the modulating signal voltage is doubled.
ii) If the carrier signal voltage is doubled.
iii) If the modulating signal frequency is doubled.
iv) If the carrier signal is removed from the transmitted signal.

b) Compare AM, DSB-SC and SSB-SC Modulation Schemes. 5 Marks

c) A 500KHz carrier signal of peak amplitude 20V is amplitude modulated with a Modulating signal of peak amplitude 7.5V and 1KHz frequency. 4 Marks
i) Derive the expression for modulated wave in time domain and frequency domain.
ii) Find the maximum and minimum values of the envelope. From these values find the modulation index and efficiency.

(OR)

4 a) Justify how a NBFM signal is equal to AM Signal. 4 Marks

b) A device with input $x(t)$ and output $y(t)$ is characterized by: $y(t) = x^2(t)$. An FM signal with Frequency deviation of 90KHz and modulating signal Band width of 5KHz is applied to this device. Find the bandwidth of the output signal. 5 Marks

c) Consider the FM signal $S(t) = 20\cos[2\pi 10^6 t + 8\sin(4\pi 10^3 t)]$. 5 Marks
i) Calculate frequency deviation, bandwidth and power.
ii) Calculate above quantities when the message signal amplitude is doubled.

UNIT-III

5 For the analog signal $\boldsymbol{x(t)=3\cos 100\pi t}$ 14 Marks
i) Determine the minimum sampling rate to avoid aliasing.
ii) Suppose that the signal is sampled at the rate, f_s=200Hz, what is the discrete time signal obtained after sampling
iii) Suppose that the signal is sampled at the rate, f_s=75Hz, what is the discrete time signal obtained after sampling.
What is the frequency $0 < f < f_s/2$ of a sinusoid that yields samples identical to

those obtained in (iii) above.

(OR)

6 a) Show that a band limited signal of finite energy which has no frequency components higher than f_m Hz is completely described by specifying values of the signals at instants of time separated by 1/2 f_m seconds. Also show that if the instantaneous values of the signal are separated at intervals larger than 1/2 f_m seconds, they fail to describe the signal. A band pass signal has spectral range extending from 20kHz to 80kHz; find the acceptable range of sampling frequency f_s. 10 Marks

b) What is the Nyquist's Frequency for the signal $x(t) = 3\cos 100t + 10\sin 30t - \cos 50t$? 4 Marks

UNIT-IV

7 a) Derive the expression for probability of error of PSK. 8 Marks

b) Compare DM, PCM and ADM. 6 Marks

(OR)

8 a) Derive the expression for probability of error of QPSK. 8 Marks

b) Write short notes on modems. 6 Marks

UNIT-V

9 a) Generate the code words for (7, 4) hamming code. 8 Marks

b) State and prove the properties of syndrome decoding. 6 Marks

(OR)

10 a) Draw the diagram of the rate convolutional encoder with generator polynomial: $g(1)(D) = 1 + D$ and $g(2)(D) = 1 + D + D^2$. And compute the encoder output for input sequence 101101. 8 Marks

b) Describe a decoding procedure for linear block code. 6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

DATAWAREHOUSING AND DATA MINING

[Computer Science and Engineering, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) What are the major issues in data mining task? Explain. 7 Marks
b) Explain data warehouse design and usage. 7 Marks

(OR)

2 a) Define data warehouse modeling. 7 Marks
b) Define data warehouse and Explain OLAP operations. 7 Marks

UNIT-II

3 a) Explain why the preprocessing is needed. 6 Marks
b) Explain in detail about various data cleansing techniques. 8 Marks

(OR)

4 a) What is meant by correlation? Explain correlation analysis in detail. 5 Marks
b) Compare the Transformation techniques with appropriate examples. 9 Marks

UNIT-III

5 a) A Transactional database has five transactions. Let min-support=60% and min confidence=80%. 7 Marks

TID	Items bought
T1	K, A, D, B
T2	D, A, C, E, B
T3	A, C, B, E
T4	B, D, E
T5	A, D, B

Find all item sets using Apriori algorithm.
b) Write the FP-growth algorithm. 7 Marks

(OR)

6 a) Define association rule mining and types with examples. 7 Marks
b) Distinguish between apriori and FP-growth algorithm. 7 Marks

UNIT-IV

7 a) What is tree pruning? Explain various pruning techniques. 4 Marks
b) Explain feed forward neural network with suitable example. 10 Marks

(OR)

8 a) Differentiate Classification and Prediction. 6 Marks
b) Describe various Prediction techniques with suitable examples. 8 Marks

UNIT-V

9 a) Analyze different types of data in cluster analysis. 7 Marks
b) Explain ***k***-Means partitioning methods. 7 Marks

(OR)

10 a) Categorize and explain major clustering methods. 7 Marks
b) Explain Density-based clustering method on connected regions with sufficiently high density. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

STEEL STRUCTURES

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 What are the different types of rolled steel sections? Explain with neat sketches. 14 Marks

(OR)

2 Explain the different types of design philosophies. 14 Marks

UNIT-II

3 Two plates 10mm and 18mm thick are to be joined by a double cover butt joint. Assuming cover plates of 8mm thickness, design the joint to transmit a factored load of 500KN.Assume Fe410 plate and grade 4.6 bolt. 14 Marks

(OR)

4 Determine the strength of a 6mm fillet weld per mm length when placed (I) in shop (II) at site. A 200 mm wide plate is to be jointed to another 300mm wide plate section. Determine the design strength of the joint if the overlap of the plates is 150mm.Both the longitudinal and end fillet welds are provided. What will be the overlap required if only longitudinal fillet welds are provided? The plates are 8mm thick and connected with minimum size of weld as per IS specifications. 14 Marks

UNIT-III

5 Design a bridge truss diagonal subjected to a factored load of 450 KN. The length of the diagonal is 4.0m. The tension member is connected to a gusset plate 16mm thick with one line of 20mm diameter bolts of grade 8.8. 14 Marks

(OR)

6 A diagonal member of a roof truss carries a maximum pull of 350 KN. Design the section and its connection with a 16mm thick gusset plate. The length of the connection is limited to 340 mm. Design the lug angles also if required the steel is of grade Fe410 and bolts of grade 4.6 are to be used. 14 Marks

UNIT-IV

7 Design a laterally supported beam of effective span 6 m for the following data. Grade of steel: Fe 410; Maximum bending moment = 150 kN-m; Maximum shear force = 210 kN; Check for deflection is not required. 14 Marks

(OR)

8 A column of 9 m effective length has to support an axial factored load of 1500 kN. Design the column which shall consist of two channels placed back to back at suitable spacing. Design also single angle lacing system. 14 Marks

UNIT-V

9 Design a slab base for a column ISHB 300@ 577N/m carrying an axial force load of 1000kN.M20 concrete is used for the foundation. 14 Marks

(OR)

10 Design a gusseted base for a column ISHB 350 @710N/m with two plates 450mm x 20mm carrying a factored load of 3600kN. The column is to be supported on concrete pedestal to be built with M20 concrete. 14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

WATER RESOURCES ENGINEERING

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Discuss physical properties of soils in the context of irrigation. What are the functions of irrigation soils? 7 Marks

b) After how many days the farmer should apply water to his field to ensure efficient use of irrigation water, if the field capacity is 27%, permanent wilting point 14%, density of soil 1500kg/m^3, effective root zone depth 0.75m and daily consumptive use of water is 11mm. 7 Marks

(OR)

2 a) Define irrigation and explain its necessity in a tropical country like India. What are the advantages and ill effects of assured irrigation? 7 Marks

b) Describe with the help of a diagram various forms of soil moisture. What do you understand by the available moisture? 7 Marks

UNIT-II

3 a) What are the main causes of failure of weir on permeable foundations and what remedies would you suggest to prevent them? 7 Marks

b) Explain Bligh's creep theory for seepage of flow below a weir. 7 Marks

(OR)

4 Draw a neat sketch showing various components of canal head works. Briefly explain the functions of each component. 14 Marks

UNIT-III

5 a) Estimate the reservoir capacity using the following data given in the table below and draw the mass curve. 7 Marks

S. No.	Year	Inflow (10^5 ha.m)
1	1970	1.2
2	1971	0.8
3	1972	0.6
4	1973	1.3
5	1974	1.6
6	1975	2.8
7	1976	3.0
8	1977	2.4
9	1978	1.6
10	1979	1.4
11	1980	1.0
12	1981	0.2

b) Mention the criteria to find the base width of the elementary profile of the gravity dam. Also derive expressions for base width by considering these criteria. 7 Marks

(OR)

6 a) Define gravity and earthen dam. Differentiate between gravity and earthen dams. 7 Marks

b) Explain causes for silting of reservoirs and methods for its control. 7 Marks

UNIT-IV

7	a)	What is an outlet? Explain the function of Gibb's module with a neat sketch.	7 Marks
	b)	Explain the different types of canal lining with neat sketches.	7 Marks

(OR)

8	a)	What are the various methods to control the seepage through the body and through the foundation of the earthen dam?	7 Marks
	b)	Design a regime channel for a discharge of 50cumecs and silt factor 1.1.Use Lacey's theory.	7 Marks

UNIT-V

9	a)	Explain various types of Aqueducts with neat sketches and mention criteria for their suitability.	7 Marks
	b)	Explain the design principles of siphon-aqueduct.	7 Marks

(OR)

10	a)	Explain various types of cross-drainage works with neat sketches.	7 Marks
	b)	Explain the site conditions required for construction of a cross drainage work.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

GEOSPATIAL TECHNOLOGIES

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Explain briefly principle and types of Aerial Photographs. 14 Marks

(OR)

2 Give brief note on:
i) Stereoscopy 7 Marks
ii) Mosaics 7 Marks

UNIT-II

3 What are the basic processes and elements involved electromagnetic remote sensing of earth resources? Explain them. 14 Marks

(OR)

4 a) Explain 7 Marks
i) Temporal resolution;
ii) Spatial resolution;
iii) Spectral resolution.
b) Explain the basics of Visual interpretation of imageries. 7 Marks

UNIT-III

5 Write short notes on the following: 14 Marks
i) Cognitive models. ii) Topology.
iii) Vector data representation. iv) Geographical Entities.
v) Shape files.

(OR)

6 a) Write short notes on GIS architecture. 7 Marks
b) What are the different map projections? Explain. 7 Marks

UNIT-IV

7 Describe briefly:
i) Attribute data storage 7 Marks
ii) Global Positioning System 7 Marks

(OR)

8 Describe briefly:
i) Vector data storage 7 Marks
ii) Spatial data 7 Marks

UNIT-V

9 Define Land use/Land cover and explain step by step processing of land use/land cover classification. 14 Marks

(OR)

10 Explain briefly preparation of soil map. 14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

TRANSPORTATION ENGINEERING–II

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Explain Road user and Vehicular characteristics in detail. 7 Marks

b) Explain in detail three E's employed in accident reduction. 7 Marks

(OR)

2 a) Explain the following components of traffic Engineering-Road, Traffic and land use characteristics. 7 Marks

b) Analyze graphically relationship between speed and concentration. 7 Marks

UNIT-II

3 a) Discuss briefly the various factors affecting the practical capacity of road 7 Marks

b) Two vehicles A and B approaching at right angles, A from west and B from South, collide with each other. After the collision, vehicles. A skids in a direction 500 North of West and vehicle B, 600 East of North. The initial skid distances of the vehicle A and B are 38 and 20 m respectively before collision. The skid distances after collision are 15 and 36 m respectively. If the weights of vehicles A and B are 4.4 and 6 tons, calculate the original speeds of the vehicle. The average skid resistance of the pavement is found to be 0.50. 7 Marks

(OR)

4 a) Enumerate the different methods of carrying out traffic volume studies and indicate the principle of each. 7 Marks

b) The consolidated data collected from speed method on a stretch of urban road of length 3.5 km, running North-South are given below. Determine the average values of volume, journey speed and running speed of the traffic stream along either direction. 7 Marks

Trip No	Direction of trip	Journey time Min-Sec	Total stopped delay Min-Sec	No. of vehicles overtaking	No. of vehicles overtaken	No. of vehicles from opp. direction
1	N-S	6-32	1-40	4	7	238
2	S-N	7-14	1-50	5	3	186
3	N-S	6-50	1-30	5	3	280
4	S-N	7-40	2-00	2	1	200
5	N-S	6-10	1-10	3	5	250
6	S-N	8-00	2-22	2	2	170
7	N-S	6-28	1-40	2	5	290
8	S-N	7-30	1-40	3	2	160

UNIT-III

5 a) What are the various types of traffic markings commonly used? What are the uses of each? 7 Marks

b) The driver of a vehicle approaching a signalized intersection at a speed of 40 kmph applied brakes on seeing the signal changing from green to amber and the vehicle was brought to top on the prescribed stop line during the amber time of 4 seconds. If the reaction time of the driver is assumed as 1.0 second, compute the average friction coefficient developed. 7 Marks

(OR)

6 a) Explain various types of traffic signals and their functions. How the signal timings are are decided? 7 Marks

b) Design the timings of an isolated signal to be installed at a right-angled intersection when roads P and Q cross. The data available are: 7 Marks

	Road P	Road Q
Width, metre	14.00	10.50
Peak hour traffic volume, vehicles per hour lane	200.00	120.00
Approach speed. kmph	50.00	35.00

UNIT-IV

7 Determine the mean rate of arrival and with the help of poisons distribution and compare the observed frequency with the theoretical frequency from the following data. The number of vehicles arriving from one direction in successive 10 seconds intervals was counted and recorded below: 14 Marks

Vehicles arriving in 10 seconds intervals	**Frequency**
0	11
1	28
2	30
3	18
4	8
5	5
6	1
7 and above	0

(OR)

8 The speed and concentration of vehicles in a traffic stream were observed and the following data were obtained: 14 Marks

Concentration (Veh/Km)	5	10	15	20	25	30	35	40	45	50
Speed, KMPH	72	68	61	52	47	39	32	27	20	13

Find the regression equation for determining the speed from concentration.

UNIT-V

9 a) Explain briefly the methodology of Road Safety Audit. 7 Marks

b) Write a short note on the following 7 Marks

i) Transport system magement

ii) Travel demand Management

(OR)

10 a) Briefly explain various methods to reduce air and noise pollution due to traffic. 7 Marks

b) Briely explain Various traffic forecasting techniques. 7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

ENVIRONMENTAL POLLUTION AND CONTROL

[Civil Engineering, Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Classify air pollutants into different categories, indicating their sources.	7 Marks
	b)	Write a short notes on: i) Aerosol ii) Hydrocarbons	7 Marks
		(OR)	
2	a)	Describe with neat sketches, how different atmospheric conditions give rise to different kinds of plumes.	7 Marks
	b)	Explain dispersion of air pollutants.	7 Marks

UNIT-II

3	a)	Discuss the effects of air pollutants on human beings.	6 Marks
	b)	Describe the working principle of an Electrostatic Precipitator with a neat diagram. What are its applications?	8 Marks
		(OR)	
4	a)	Explain the principle and working of a Cyclone separator. Draw a typical cyclone with all necessary dimensions for its design.	7 Marks
	b)	Describe the causes and effects of Global warming. How global warming can be controlled?	7 Marks

UNIT-III

5	a)	What are the principal sources of ground water pollution? Explain any two sources.	7 Marks
	b)	Analyze various control measures for water pollution.	7 Marks
		(OR)	
6	a)	What are the sources, effects and control measures of marine pollution?	7 Marks
	b)	What is eutrophication, what causes it and what are the dangers?	7 Marks

UNIT-IV

7		List out and explain the effects of soil pollutants which are considered as important.	14 Marks
		(OR)	
8	a)	What are the measures to be taken to prevent soil pollution?	7 Marks
	b)	What is biological magnification? Explain in detail.	7 Marks

UNIT-V

9	a)	Explain the sources of solid wastes.	7 Marks
	b)	Explain sanitary landfill.	7 Marks
		(OR)	
10		Explain the disposal methods of solid wastes.	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

RURAL TECHNOLOGY

[Civil Engineering, Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Explain the role of CAPART in rural development.	14 Marks
		(OR)	
2		Explain the role of science and technology in rural development.	14 Marks

UNIT-II

3	a)	What is meant by 3R principle? State the advantages of 3R principle.	7 Marks
	b)	Explain the use of Biogas as an alternate source of energy.	7 Marks
		(OR)	
4	a)	Explain the different types of alternate sources of energy.	7 Marks
	b)	Explain the different sources of non-conventional energy.	7 Marks

UNIT-III

5		Explain the role of food and agro based technologies in Rural development.	14 Marks
		(OR)	
6		Detail the role of cottage and social industries in Rural development.	14 Marks

UNIT-IV

7		Write a short note on Medical and aromatic plants and explain their need in community development.	14 Marks
		(OR)	
8	a)	Explain water purification methods in context of rural suitability and sustainability.	7 Marks
	b)	Write a detailed note on rain water harvesting.	7 Marks

UNIT-V

9		What is meant by CSR? State the role of private sector in rural development.	14 Marks
		(OR)	
10	a)	Write a short note on village adoption schemes.	7 Marks
	b)	What is SAGY? Explain.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

ADVANCED FOUNDATION ENGINEERING

[Civil Engineering]

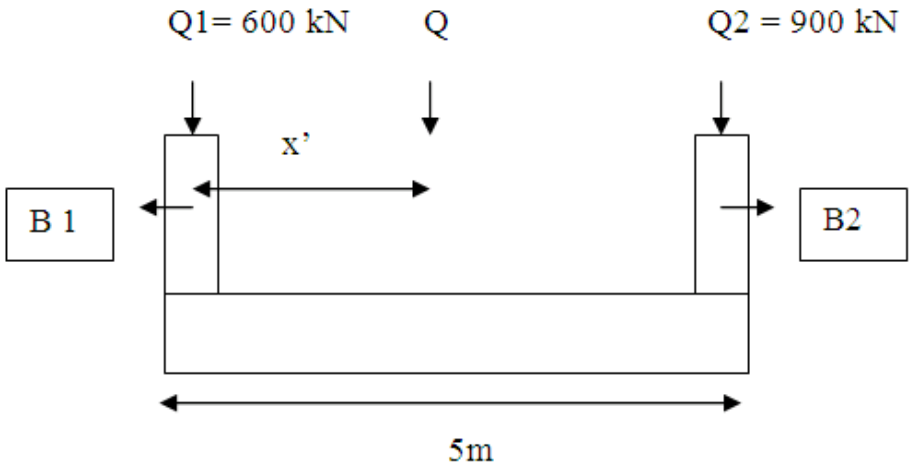
Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) What are the factors influencing bearing capacity of soil? 4 Marks

b) Design a Rectangular combined footing for two columns as shown in figure. Take net allowable pressure as 100 kN/m^2. Take B1 as 0.3m x 0.3m and B2 as 0.4m x 0.4m. 10 Marks



(OR)

2 a) Determine Terzaghi's bearing capacity theory with a neat sketch. How does it differ from Meyerhof's theory? 10 Marks

b) Compute the immediate settlement beneath the center of 3.0m x 2.0m flexible footing resting at 0.6 m below and carrying 900 kN load. The supporting soil deposit is having uniform cohesion less soil with average E value of 25 x 10^3 kN/m^2. 4 Marks

UNIT-II

3 a) What is negative skin friction? How is it calculated for a single pile and a group of piles in clay? 6 Marks

b) A precast concrete pile 35 cm x 35 cm is driven by a single acting steam hammer. Estimate the allowable load using 8 Marks

i) Engineering News Record Formula (F.S= 6)

ii) Danish Formula (F.S = 4).

Use the following data

i) Maximum rated energy	= 3500 kN-cm
ii) Weight of hammer	= 35 kN
iii) Length of pile	= 15 m
iv) Efficiency of hammer	= 0.8
v) Coefficient of resistitution	= 0.5
vi) Weight of pile cap	= 3 kN
vii) No of blow for last 25.4 mm	= 6

Modulus of elasticity of concrete= 2 x 10^7 kN/m^2.

(OR)

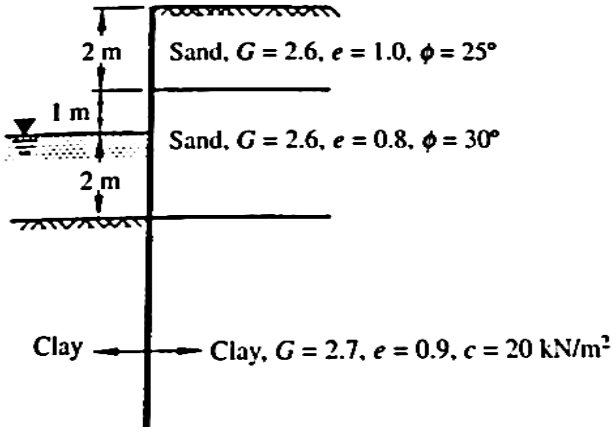
4 a) Explain the methods for estimating the load carry capacity of a pile. 6 Marks

b) A reinforced concrete pile 9 m long and 0.38 m in diameter is embedded in saturated clay of very stiff consistency. Laboratory tests on samples of undisturbed soil gave an average undrained cohesive strength c_u = 120 kN/m^2. Determine the allowable axial capacity with Fs = 3. α = 0.9. 8 Marks

UNIT-III

5 a) Classify the sheet piles according to their materials. 4 Marks

b) Design the depth of embedment for a sheet pile wall shown in figure. 10 Marks



(OR)

6 a) What are the advantages and disadvantages of sheet piles? 6 Marks

b) Describe the 'equivalent beam' method of designing anchored bulkheads. 8 Marks

UNIT-IV

7 Write short notes on:

a) Distinguish between soft clays and expansive soils. 5 Marks

b) Foundation techniques in expansive soil. 5 Marks

c) Identification tests of expansive soils. 4 Marks

(OR)

8 a) Discuss the principal and functioning of under reamed piles. 7 Marks

b) Explain Lime column Technique. 7 Marks

UNIT-V

9 a) Write a brief note on design of wall type breakwaters. 6 Marks

b) What are the different types of loads that are to be considered in design of marine substructures? 8 Marks

(OR)

10 Explain the following in brief: 14 Marks

i) Quay walls; ii) Piers; iii) Docks.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

ENVIRONMENTAL IMPACT ASSESSMENT AND MANAGEMENT

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is EIA? Explain.	7 Marks
	b)	Discuss objectives, merits and demerits of EIA.	7 Marks
		(OR)	
2	a)	Explain the different characteristics that the impact evaluation methods should have.	7 Marks
	b)	Describe the elements of EIA.	7 Marks

UNIT-II

3	a)	Describe Environmental Media Quality Index method in detail.	7 Marks
	b)	Describe the EIA methodologies.	7 Marks
		(OR)	
4	a)	Give a brief account on cost benefit analysis of EIA.	7 Marks
	b)	Discuss about the need of EIA for engineering projects.	7 Marks

UNIT-III

5	a)	Draw the schematic diagram for conceptual approach to the study focused on surface water Environment impacts.	7 Marks
	b)	Write a detailed note on 'compilation of water Quantity-Quality information.	7 Marks
		(OR)	
6	a)	Write a detailed note on identification of activities which will have different types of impacts on soil and ground water Quantity and Quality.	7 Marks
	b)	Explain in detail about impact significance and mitigation measures.	7 Marks

UNIT-IV

7	a)	Mention any four major ill effects of air pollution on human health.	7 Marks
	b)	Discuss the general approach for assessment of air pollution impact.	7 Marks
		(OR)	
8	a)	What do you understand by “Impact Significance”? Give any four biological-ecological principles that could be applied in impact interpretation.	7 Marks
	b)	Discuss the components of impact analysis for vegetation and wild life that would be affected by developmental projects.	7 Marks

UNIT-V

9	a)	State briefly about the Environmental Legislation in India. What is an audit protocol?	7 Marks
	b)	Explain the procedure adopted for evaluation of audit data and the preparation of audit report.	7 Marks
		(OR)	
10	a)	Enlist the salient features of Environmental Protection Act.	7 Marks
	b)	Discuss briefly the elements of Environmental Impact Assessment.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

POWER SEMICONDUCTOR DRIVES

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit

All questions carry equal marks

UNIT-I

1 a) Explain different modes of operation of electrical drives. 7 Marks

b) A drive has following parameters. 7 Marks

$J=10$ Kg-m^2, $T=100 - 0.1N$, N-m, passive load torque $T_l = 0.05N$, N-m, where N is speed in rpm. Initially the drive is operating in steady state. Now it is to be reversed. For this motor characteristic is changed to $T= -100 - 0.1N$. Calculate the time of reversal.

(OR)

2 a) Explain the different components of basic electrical drive system. 6 Marks

b) What do you mean by regenerative braking of motor? Explain. 8 Marks

UNIT-II

3 a) Explain the operation of a separately excited **dc** motor supplied from 1-phase fully controlled rectifier. Assume discontinuous conduction. 7 Marks

b) Explain the operation of a series **dc** motor supplied from 1-phase half controlled rectifier with necessary diagrams. Assume continuous conduction. 7 Marks

(OR)

4 a) Explain the operation of a separately excited dc motor supplied from 3-phase fully controlled rectifier with necessary diagrams. Assume Continuous conduction. 7 Marks

b) A 220V, 1440rpm, 120A separately excited **dc** motor with armature resistance of 0.7 Ω is fed from 3-phase fully controlled converter with an ac source line voltage 440V, 50 Hz supply. A star connected transformer is used to feed the armature so that motor terminal voltage equals rated voltage when converter firing angle is zero. Calculate the value of firing angle when motor is running at 1200 rpm at rated torque. 7 Marks

UNIT-III

5 a) Give speed expression of **dc** separately excited motor under regenerative braking by chopper control. 4 Marks

b) A 220 V, 300 A **dc** series motor has combined resistance of armature and field of 0.04 ohms. Running on no load as a generator with field winding connected to a separate source it gave following magnetization characteristic at 600 rpm. 10 Marks

Current, A	50	100	150	250	300	350
Voltage, v	66.5	124	158.5	198.5	211	221.5

Motor is controlled by a chopper from source voltage of 220 V.

i) Calculate motor speed for a duty ratio of 0.8 and motor current of 300 A.

ii) Calculate torque for a speed of 500 rpm and duty ratio of 0.8.

(OR)

6	a)	Draw and brief speed torque characteristics chopper control D.C. series motor.	4 Marks
	b)	A 230v, 1000rpm 30A separately excited motor has the armature resistance and inductance of 0.7 Ω and 50mH, respectively. Motor is controlled in regenerative braking by a chopper operating at 800 Hz from a dc source of 230 V. Assuming continuous conduction i) Calculate duty ratio of chopper for rated torque and the speed of 800 rpm. ii) What will be the motor speed for duty ratio of 0.6 and rated motor torque?	10 Marks

UNIT-IV

7	a)	Discuss speed control of induction motor from stator side with speed-torque curves.	7 Marks
	b)	The parameters of a three phase 400 Volts, 50 Hz, 6 pole, 960 rpm, and star connected induction motor has the following parameters per phase referred to the stator. R_1= 0.4 Ohm. R_2 = 0.20 Ohm, X_1 = X_2 =1.5 Ohm, X_m = 30 Ohms. If the motor is controlled by variable frequency control at a constant flux of rated value, determine the motor speed and the stator current at half the rated torque and 25Hz.	7 Marks

(OR)

8	a)	Explain speed control of Induction motors using AC Voltage Controller.	6 Marks
	b)	Draw the circuit diagram and explain the working of a slip power recovery system using static Scherbius system for a three phase induction motor.	8 Marks

UNIT-V

9	a)	Discuss modes of operation of switched reluctance motor.	8 Marks
	b)	State the advantages and disadvantages of stepper motors.	6 Marks

(OR)

10		Explain the operation of self controlled synchronous motor drive fed from VSI.	14 Marks

CODE No.:14BT70202 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

POWER SYSTEM OPERATION AND CONTROL

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit

All questions carry equal marks

UNIT-I

1 a) A constant load of 300MW is supplied by two 200MW generators 1 and 2 for which the respective incremental fuel costs are: 7 Marks

$$\frac{dF_1}{dP_1} = 0.1P_1 + 20 \qquad \frac{dF_2}{dP_2} = 0.12P_2 + 15$$

With power P in MW and costs F in Rs./hour.

i) Design most economical division of load between the generators.

ii) Estimate the saving in Rs./day

Compare the savings if equal load sharing is between the generators.

b) The cost of coal for each generator is as follows. 7 Marks

$F_1 = 459 + 6.48P_1 + 0.00128P_1^2$

$F_2 = 310 + 7.85\ P_2 + 0.00194P_2^2$

$F_3 = 78 + 7.97\ P_3 + 0.00482P_3^2$

The total load is 850 MW.

The limitation for generators are:

Unit I $150MW \leq \mathbf{P_1} \leq 600MW$

Unit II $100MW \leq P_2 \leq 400MW$

Unit III $50MW \leq P_3 \leq 200MW$

Estimate the economic operating point.

(OR)

2 a) Obtain the economic allocation of generation among generators of a thermal system without considering the transmission losses with necessary equations. 7 Marks

b) The following figure shows a system having two plants 1 and 2 connected to buses 1 and 2 respectively. There are two loads and a network of four branches. The reference bus with a voltage of $1.0 \angle 0^\circ$ P.U is shown on the diagram. The branch currents and impedances are given below in P.U. 7 Marks

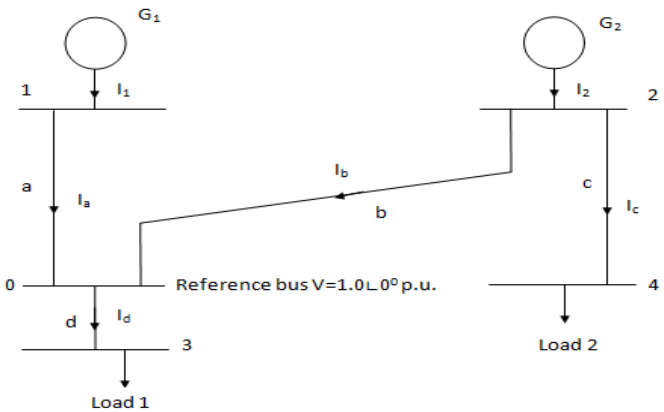
$I_a = 2 - j\ 0.5$ P.U $\qquad I_c = 1.0 - j\ 0.25$ P.U

$I_b = 1.6 - j\ 0.4$ P.U $\qquad I_d = 3.6 - j\ 0.9$ P.U

$Z_a = 0.015 + j\ 0.06$ P.U $\qquad Z_c = 0.01 + j\ 0.04$ P.U

$Z_b = 0.015 + j\ 0.06$ P.U $\qquad Z_d = 0.01 + j\ 0.04$ P.U

Calculate (B) matrix co-efficient?



UNIT-II

3	a)	A hydro and a thermal plant supply a constant load of 100MW for 1 week. The characteristics of the plant are as fallows Hydro plant: $Q = 5.1P_{GH} + 110 m^3/s \; 0 \le P_{GH} \le 60MW$ Thermal plant: $F=0.022P^2_{GT}+11.5P_{GT} + 55$ unit cost/MWh $10 \le P_{GT} \le 60MW$ Determine the schedule if i) The hydro plant is limited to 12000MWh and ii) The volume of water drawn is limited to 3.2×10^3 m^3.	7 Marks
	b)	Explain about operational constraints in Hydro-Thermal Plants.	7 Marks
		(OR)	
4	a)	With relevant equations obtain the short term scheduling of hydrothermal power system using penalty method.	7 Marks
	b)	The following are data pertaining to three units in a plant. Unit 1: Min. = 150 MW; Max. = 600 MW $C1 = 5610 + 79.2P_1 + 0.01562P_1$ Rs/ h Unit 2: Min. = 100 MW; Max. = 400 MW $C2 = 3100 + 78.5P_2 + 0.0194 P_2$ Rs/ h Unit 3: Min. = 50 MW; Max. = 200 MW $C3 = 936 + 95.64 P_3 + 0.05784 P_3$ Rs/ h. What unit or combination of units should be used to supply a load of 550 MW most economically?	7 Marks

UNIT-III

5	a)	Explain, what is Priority List method.	7 Marks
	b)	What is "Unit Commitment" problem? Distinguish between Economic Dispatch and Unit Commitment problems.	7 Marks
		(OR)	
6		What are the various methods of Unit Commitment? Explain each of them with relevant equations.	14 Marks

UNIT-IV

7		Obtain the composite block diagram of single area load frequency control of a power system for a non-reheat turbine with necessary mathematical model.	14 Marks
		(OR)	
8		Classify the excitation systems and describe the block diagram of IEEE type-1 excitation system.	14 Marks

UNIT-V

9	a)	Two generators rated 200MW and 400MW are operating in parallel. The droop characteristics of their governors are 4% and 5% respectively from no load to full load. The speed changers are set so that the generators operate at 50Hz sharing the full load of 600MW in the ratio of their ratings. If the load reduces to 400MW, how will it be shared among the generators and estimate the system frequency? Assume free governor operation.	7 Marks
	b)	A 250MVA synchronous generator is operating at 3000 r.p.m, 50Hz. A load of 50MW is suddenly applied to the machine and the station valve to the turbine opens only after 0.5sec due to the time lag in the generator action. Calculate the frequency to which the generated voltage drops before the steam flow commences to increase to meet the new load. Given that the valve of H of the generator is 6 kW-sec per kVA of the generator energy.	7 Marks
		(OR)	
10	a)	For two-area load frequency control with gain blocks, derive an expression for steady values of change in frequency and tie line power for simultaneously applied unit step load disturbance inputs in the two areas.	7 Marks
	b)	Discuss the importance of combined load frequency control and economic dispatch control with a neat block diagram.	7 Marks

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IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

POWER SYSTEM ANALYSIS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) For the network of the Fig. 1, draw the graph and write a tie-set schedule. Using the tie-set schedule obtain the loop equations and find the currents in all branches. 7 Marks

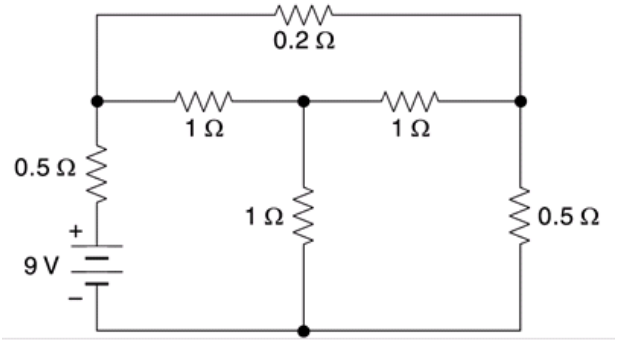

Fig. 1

b) For the network of Fig.1, write a cut-set schedule, obtain modal equations and find branch currents. 7 Marks

(OR)

2 a) What is primitive network matrix and represent its forms? Prove $Y_{bus} = A_t [y] A$ using singular transformation? 10 Marks

b) What is the difference between element-node incidence matrix and bus-incidence matrix? 2 Marks

c) What is primitive network matrix? 2 Marks

UNIT-II

3 a) For the network shown in Fig.2, determine Z_{bus} using Z_{bus} building algorithm with node ' 1' as reference. Self impedances of the elements are in p.u. and marked on the diagram. Add elements in the ascending order of their numbering. 10 Marks

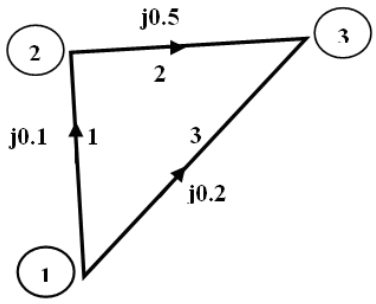

Fig.2

b) Modify the Z_{bus} matrix thus obtained in above problem, when the element 1-2 self impedance is to be changed to j0.4. 4 Marks

(OR)

4 a) With the help of expressions explain the procedure of representing tap changing transformers. 7 Marks

b) Write down the expressions and explain the terms in Park's and Clarke's transformations. 7 Marks

UNIT-III

5 a) Consider the system shown in Fig.3 It shows a transmission network with impedance of transmission lines all in p.u as shown. Compute Y_{bus} matrix using Singular Transformation. 10 Marks

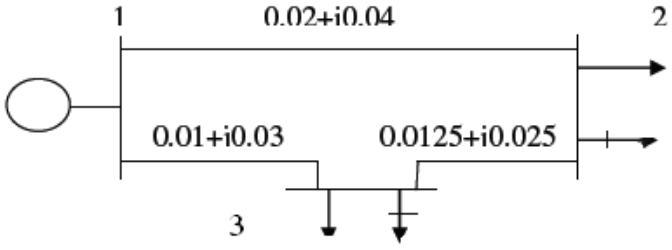

Fig. 3

b) Explain the advantages of the bus impedance matrix. 4 Marks

(OR)

6 Determine bus voltages at the end of 2nd iteration by Gauss-Seidal method. Take acceleration factor as 1.6. 14 Marks

Table 1

Bus Code	Admittances (p.u)
1 – 2	2 – j8
1 – 3	1 – j4
2 – 3	0.6 – j2.6

Table 2

Bus Code	P_D in p.u	Q_D in p.u	V in p.u	Remarks
1	–	–	1.06∟0°	Slack
2	0.5	0.2	–	PQ
3	0.4	0.3	–	PQ

UNIT-IV

7 a) Compare the Jacobian matrices of NR and FDC methods of load flow solution. 7 Marks

b) Compare GS-method, NR, decoupled and FDLF methods with respect to 7 Marks

i) Number of equations. ii) Memory.

iii) Time for iteration. iv) Convergence.

(OR)

8 Explain with a flow chart the computational procedure for load flow solution using Newton-Raphson method. 14 Marks

UNIT-V

9 a) Solve the equivalent inertia constant of two machines swinging coherently. 7 Marks

b) A 50 Hz, 4 pole turbo generator rated 100MVA.11 kV has an inertia constant of 8 MJ/MVA. 7 Marks

i) Find the stored energy in the rotor at synchronous speed.

ii) If the mechanical input is suddenly raised to 80MW for an electrical load of 50MW, find the rotor acceleration, neglecting mechanical and electrical losses.

(OR)

10 a) Explain point-by-point method to solve swing equation. 7 Marks

b) An AC generator is delivering 50% of maximum power to infinite bus, due to sudden short circuit the reactance between generator and infinite bus is increased to 500% of the value before the fault. The maximum that can be delivering after clearance of fault is 75% of the original value. Calculate the critical clearing angle to maintain stability. 7 Marks

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IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

REACTIVE POWER COMPENSATION AND MANAGEMENT

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe the role reactive power compensation and management.	4 Marks
	b)	Explain various approximate voltage - reactive power characteristics of compensated system and also explain the reactive power balance diagram.	10 Marks
		(OR)	
2	a)	Draw and explain the reactive power characteristics for voltage regulation with a varying inductive load.	7 Marks
	b)	Explain the concept of load compensation in terms of symmetrical components.	7 Marks

UNIT-II

3	a)	Write the objectives and practical limitations of series compensation.	7 Marks
	b)	Discuss about passive shunt and dynamic compensation techniques.	7 Marks
		(OR)	
4	a)	Write a short note on Surge impedance compensation.	4 Marks
	b)	Explain the switched shunt reactor compensation for uncompensated transmission line.	10 Marks

UNIT-III

5		Explain the following about reactive power coordination i) Mathematical Modeling ii) Transmission benefits	14 Marks
		(OR)	
6	a)	Define harmonics. What are the harmful effects of harmonics?	7 Marks
	b)	Explain about Power supply disturbances and Steady state variations.	7 Marks

UNIT-IV

7	a)	What is meant by retrofitting of capacitor banks? Explain.	7 Marks
	b)	Explain Reconfiguration methods and Optimizing power flow method used for reduction of losses in power systems.	7 Marks
		(OR)	
8	a)	Explain about reactive power planning and its objectives.	7 Marks
	b)	Explain how user side reactive power management is obtained by means of capacitors.	7 Marks

UNIT-V

9	a)	Explain the deciding factors for selection of capacitors.	7 Marks
	b)	Discuss about typical layout of traction systems.	7 Marks
		(OR)	
10	a)	Write a short note on distribution transformers.	7 Marks
	b)	Explain the different factors involved in the selection of capacitors.	7 Marks

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IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

FINITE ELEMENT METHODS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit

All questions carry equal marks

UNIT-I

1 a) Discuss the concept of plane stress and plane strain problems with examples. 7 Marks

b) Explain the finite element procedure for solving a solid mechanics problem. 7 Marks

(OR)

2 a) Derive the temperature load vector for a linear bar element. 7 Marks

b) Differentiate linear and quadratic elements in the analysis of bar problems. 7 Marks

UNIT-II

3 For the two-bar truss shown in Figure 1, determine the displacements of node 1 and the stress in element connecting nodes 1 and 3. 14 Marks

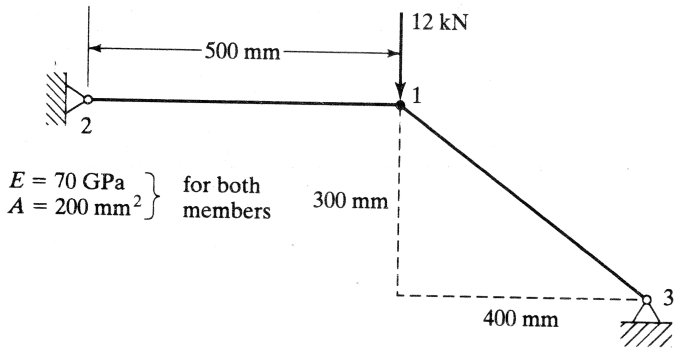


Figure 1.

(OR)

4 a) Plot Hermite shape functions of a beam element and discuss the end conditions. 7 Marks

b) Explain the procedure used to determine support reactions of beam in FEM. 7 Marks

UNIT-III

5 a) Justify the title 'constant strain triangle' of a linear triangular element. 4 Marks

b) What is a Jacobian matrix in CST element formulation? 4 Marks

c) Identify the difference in FE modeling of plane stress and plane strain problems. 6 Marks

(OR)

6 An axisymmetric body with a linearly distributed load on the conical surface is shown in Figure 2. Determine the equivalent point loads at nodes 2, 4 and 6. Take the coordinates r_6=60mm, z_6=40mm, r_4=40mm, z_4=55mm, r_2=20mm, z_2=70mm. 14 Marks

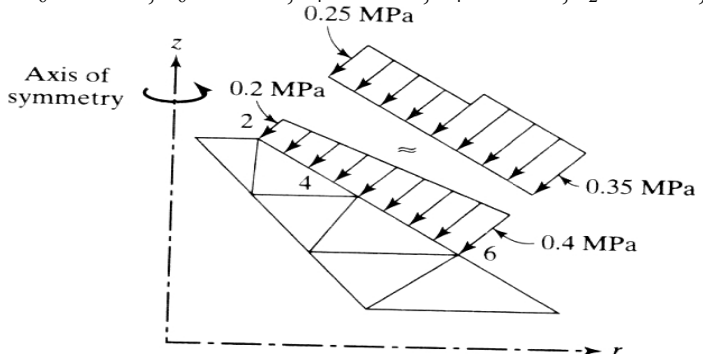


Figure 2.

UNIT-IV

7 a) Explain the capabilities of 7 Marks
i) Sub parametric,
ii) Iso parametric; and
iii) Super parametric elements.

b) Discuss the concept of numerical integration. 7 Marks

(OR)

8 Refer to Figure 3. The outside of a heating tape is insulated, while the inside is attached to one face of a 20mm thick stainless steel plate (k=16.6 W/m^{0}C). The other face of the plate is exposed to the surroundings, which are at a temperature of 20^{0}C. Heat is supplied at a rate of 500 W/m^2. Using two-element model determine the temperature of the face to which the heating tape is attached. 14 Marks

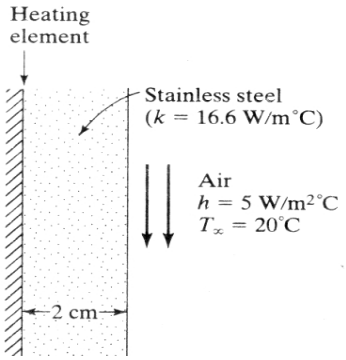


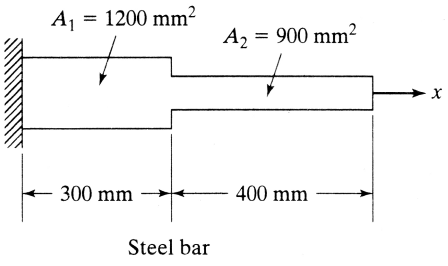
Figure 3.

UNIT-V

9 Derive the element consistent mass matrix for a CST element. 14 Marks

(OR)

10 Determine the natural frequencies of the stepped bar shown in Figure 4. Take E=200GPa and density=7850 kg/m^3. 14 Marks



Steel bar

Figure 4.

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MANUFACTURING SYSTEM DESIGN

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss about classification scheme of manufacturing systems.	7 Marks
	b)	Explain advanced automation functions with their levels.	7 Marks
		(OR)	
2		Explain about principles of Automation and its strategies.	14 Marks

UNIT-II

3		Discuss about modeling of automated manufacturing system mentioning its importance.	14 Marks
		(OR)	
4		Discuss the following performance measures in an automated manufacturing: i) Work in process. ii) Machine utilization.	14 Marks

UNIT-III

5	a)	Discuss in brief about manned cells.	7 Marks
	b)	Explain about fundamentals of automated assembly systems.	7 Marks
		(OR)	
6		List and explain in detail about different types of Material handling equipment used in industries.	14 Marks

UNIT-IV

7	a)	Discuss objectives of Cellular Manufacturing System.	7 Marks
	b)	Explain the benefits of Flexible Manufacturing System.	7 Marks
		(OR)	
8		Explain the quantitative analysis of Flexible Manufacturing System for a simple bottle model.	14 Marks

UNIT-V

9	a)	Explain about various techniques of simulation.	7 Marks
	b)	Describe the procedure for simulation using software.	7 Marks
		(OR)	
10	a)	Differentiate between Continuous and Static simulation models.	7 Marks
	b)	What are the applications of simulation?	7 Marks

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IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

METROLOGY AND MEASUREMENTS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit

All questions carry equal marks

UNIT-I

1	a)	Define the following terms with an example: i) Allowance; ii) Clearance; iii) Interference.	9 Marks
	b)	List out various advantages and limitations of limit gauges.	5 Marks
		(OR)	
2	a)	Explain unilateral system and bilateral system of tolerances.	5 Marks
	b)	Describe in brief the construction and working of a pneumatic comparator with a neat sketch.	9 Marks

UNIT-II

3	a)	List the different types of Interferometers and explain about Michelson Interferometer.	9 Marks
	b)	Distinguish between line and end standards. How are end standards derived from line standards? Give examples.	5 Marks
		(OR)	
4	a)	Discuss with suitable sketches, the method for testing for straightness by using spirit level and autocollimator.	9 Marks
	b)	Select the sizes of angle gauges needed to build the following angles: 220, 110 20', 290 54', 310 49′ 24″.	5 Marks

UNIT-III

5	a)	Discuss with a neat sketch working principle of Taylor Hobson Talysurf.	7 Marks
	b)	Compare two and three wire methods of measuring the effective diameter of a screw thread.	7 Marks
		(OR)	
6	a)	Explain with a neat sketch the working principle of gear tooth caliper.	7 Marks
	b)	Explain the following alignment tests on lathe: i) True running of locating cylinder of main spindle, ii) True running of taper socket in main spindle, iii) True running of headstock center.	7 Marks

UNIT-IV

7	a)	Explain the method of usage of resistance strain gauge for measuring torque.	7 Marks
	b)	Explain the construction and working principle of photo electric transducer to measure displacement with a neat sketch.	7 Marks
		(OR)	
8	a)	Distinguish between mechanical and electrical tachometers.	7 Marks
	b)	Explain the construction and working principle of non contact type of tachometer with a neat sketch.	7 Marks

UNIT-V

9	a)	Explain the calibration procedure in temperature measurement.	7 Marks
	b)	What is the principle of Radiation methods of measuring temperature?	7 Marks
		(OR)	
10	a)	Explain the principle of dead weight gauge.	7 Marks

b) Explain the principle of Prony brake Dynamometer. 7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

INDUSTRIAL AUTOMATION AND ROBOTICS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Compare and contrast any two part transfer methods and mechanisms.	8 Marks
	b)	Define the terms: i) Hard automation; ii) Machine intelligence.	6 Marks
		(OR)	
2	a)	Explain "automation and robotics" and explain how robot is different from mechanical manipulator.	7 Marks
	b)	What is industrial automation? What are its types?	7 Marks

UNIT-II

3	a)	Describe the functions of the four basic components of a robot.	8 Marks
	b)	Explain the classification of robots based on control method.	6 Marks
		(OR)	
4	a)	With neat sketch explain the magnetic grippers.	6 Marks
	b)	Discuss about various robot drives systems in brief.	8 Marks

UNIT-III

5		What is the rotation matrix for a rotation of 30^0 about the OZ axis, followed by a rotation of 60^0 about the OX axis, followed by a rotation of 90^0 about the OY axis?	14 Marks
		(OR)	
6		Discuss about Lagrangian formulation for a planar 2R manipulator.	14 Marks

UNIT-IV

7		With suitable applications explain the following in brief: i) Slip sensors. ii) Forced oscillation Slip sensors. iii) Proximity sensors.	14 Marks
		(OR)	
8		A jointed - arm robot of configuration RRR is to move all three axes so that the first joint is rotated through 50^0, the second joint is rotated through $90^0$and the third joint is rotated through 25^0. Maximum speed of any of these rotational joints is 100/s. Ignore effects of acceleration and deceleration. i) Calculate the time required to move each joint if skew motion is used. ii) Calculate the time required to move the arm to the desired position and the rotational velocity of each joint, if joint - interpolation motion is used.	14 Marks

UNIT-V

9		Discuss the programming methods used in robots mentioning their specific fields of application.	14 Marks
		(OR)	
10		Discuss at least five robotic applications in terms of the type of robot that is best suited for the job, the level of external sensory information required and the repeatability of the manipulator demanded by the task.	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations, November 2018

REFRIGERATION AND AIR CONDITIONING

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the working of a Bell Coleman refrigerator and give its applications.	6 Marks
	b)	An air refrigeration system operating on Bell-Coleman cycle takes in air from cold room at –6ºC and compresses from 1.04 bar to 6.2 bar. The index of compression is 1.28. The compressed air is cooled to 25ºC. The ambient temperature is 18ºC. Air expands in an expander where index of expansion is 1.38. Determine i) C.O.P. of the system. ii) Capacity of the plant if air circulates at 5 kg/min.	8 Marks

(OR)

2		What is the necessity of aircraft refrigeration? Explain simple cooling system and its limitations to use in aircraft refrigeration.	14 Marks

UNIT-II

3	a)	Explain Vapor compression refrigeration system and sketch the processes on T-S and P-h property charts.	8 Marks
	b)	What is ASHRAE coding of refrigerants? Give examples for each class.	6 Marks

(OR)

4		A Freon -12 refrigerator producing a cooling effect of 20 KJ/s operates on a simple cycle with pressure limits of 1.509 bar and 9.607 bar. The vapor leaves the evaporator dry saturated and there is no under cooling. Determine the power required by the machine. If the compressor operates at 300 r.p.m. and has a clearance volume of 3 % of stroke volume, determine the piston displacement of the compressor. For compressor assume that compression follows the law $\mathbf{pv^{1.13}}$ = constant.	14 Marks

UNIT-III

5	a)	Explain briefly with a neat diagram 'Practical vapour absorption system'. Derive an expression for the Maximum COP of an VAR system.	7 Marks
	b)	Explain the working principle of thermoelectric refrigeration system. Give its advantages and disadvantages.	7 Marks

(OR)

6	a)	Describe the working of a steam jet refrigeration system with the help of a neat sketch. Give its advantages and disadvantages.	10 Marks
	b)	Discuss the advantages of vapour absorption system over VCR system.	4 Marks

UNIT-IV

7	a)	Show the following processes on the skeleton psychrometric chart: i) Adiabatic mixing of two air streams. ii) Cooling and Dehumidification.	6 Marks

b) The readings from a sling psychrometer are as follows: 8 Marks
DBT = 30ºC, WBT = 20ºC, Barometer reading = 740 mm of Hg.
Determine:

i) Due Point Temperature. ii) Relative Humidity.
iii) Specific Humidity. iv) Degree of Saturation.
v) Vapour Density. vi) Enthalpy.

(OR)

8 a) With the help of a neat sketch, explain Year round-air conditioning system. 6 Marks

b) Air at 12C DBT and 85% RH is to be brought to 36 C DBT and 23.2C WBT with the help of winter air-conditioner. If the humidified air comes out of the humidifier at 85% RH, draw the various processes involved on the Skelton psychrometric chart and determine: (i) Temperature to which air should be heated. (ii) Efficiency of the air washer. 8 Marks

UNIT-V

9 a) Define the human comfort and explain the factors which affect human comfort. 7 Marks

b) Discuss the various types of duct systems and their applications. 7 Marks

(OR)

10 a) What are the advantages and disadvantages of spray type dehumidifier Over coil type dehumidifier. 7 Marks

b) Explain the use of heat pump for heating and cooling cycle with neat diagram. 7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations, November 2018

SUPPLY CHAIN MANAGEMENT

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the importance of supply chain decisions in managing firm's profits.	7 Marks
	b)	Discuss different phases in a supply chain.	7 Marks
		(OR)	
2	a)	Define competitive strategy. Explain how the firms are gaining competitive strategies through SCM.	7 Marks
	b)	Describe the supply chain drivers with the help of a neat sketch.	7 Marks

UNIT-II

3	a)	What are the factors involved in creating the distribution channels?	6 Marks
	b)	A firm has a demand distribution during the constant lead time of every week with a standard deviation of 250 units. The firm wants to provide 98 % service. How much safety stock should be carried out? If the demand during the lead team averages 800 units, what is the appropriate recorder level? (The value for 98% service level from standard normal table is 2.05)	8 Marks
		(OR)	
4	a)	State and explain various types of costs associated with inventory.	7 Marks
	b)	Considering yourself as a Fast Food Distributor, Analyze the distribution system in Supply Chain by suitable case of your choice.	7 Marks

UNIT-III

5	a)	Give examples of some of the emerging technologies for sharing and analyzing information in a supply chain	4 Marks
	b)	Analyze the importance and application of information technology in supply chain especially with respect to customer interaction process.	10 Marks
		(OR)	
6	a)	Breakdown the important characteristic of information while making decisions in supply chain.	4 Marks
	b)	Consider the supply chain involved when a customer orders a book from Amazon. Identify the push/pull boundary and two processes each in the push and pull phases.	10 Marks

UNIT-IV

7	a)	Which are various modes of transportations? Explain any two in detail.	7 Marks
	b)	Explain Responsiveness, Reliability, Relationships used as a frame work for transportation decision.	7 Marks
		(OR)	
8	a)	What modes of transportation are best suited for large, low-value shipments? Why?	7 Marks
	b)	Explain about the recent developments that have happened in the various modes of transportation in India.	7 Marks

UNIT-V

9	a)	Breakdown the different attributes along which the customer demand from different segments vary.	6 Marks
	b)	Mention some of the ways that a firm such as Wal-Mart benefits from good sourcing decisions.	8 Marks

(OR)

10	a)	Discuss the steps required to align Supply Chain with corporate business strategy.	6 Marks
	b)	Illustrate in detail any eight supply chain management metrics.	8 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

POWER PLANT ENGINEERING

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What factors are considered in selecting a site for a thermal power plant?	7 Marks
	b)	What is the importance of thermal power plant in the national power grid?	7 Marks
		(OR)	
2	a)	What is meant by overfeed and underfeed principles of coal firing? Which is preferred for Volatile coal and why?	7 Marks
	b)	What are the advantages of burning the fuels in pulverized form?	7 Marks

UNIT-II

3	a)	List the essential components of a diesel power plant and explain them briefly.	9 Marks
	b)	Write short notes on "Super charging" and list the advantages.	5 Marks
		(OR)	
4		Explain briefly the methods employed for improvement of thermal efficiency of open cycle gas turbine plant.	14 Marks

UNIT-III

5	a)	Compare masonry dams with earth fill dams using a suitable example.	6 Marks
	b)	Explain the working of a Boiling Water Reactor and list its advantages over PWR.	8 Marks
		(OR)	
6	a)	What is the function of a spillway in a hydro power plant? Discuss different types.	6 Marks
	b)	What is the mechanism of breeding? Explain the working of a Fast Breeder Reactor.	8 Marks

UNIT-IV

7	a)	Explain the working principle of Hydal Power Plant.	7 Marks
	b)	Explain the working principle of Thermionic conversion system.	7 Marks
		(OR)	
8	a)	Explain the working principle of Magneto Hydro Dynamic generator.	7 Marks
	b)	Write short notes on Wind power plant.	7 Marks

UNIT-V

9	a)	Discuss about water pollution by thermal plants and its control.	6 Marks
	b)	A thermal power plant consists of two 60MW units each running for 8000 hours and one 30MW unit running for 2000 hours per year. The energy produced by the plant is 876 $\times 10^6$ KWh per year. Determine plant load factor and plant use factor. Consider maximum demand is equal to plant capacity.	8 Marks
		(OR)	

10 a) A residential load of a locality is given below. Draw the load curve and find out the load factor and energy consumed during 24 hours. 8 Marks

Time (hrs)	0-5	5-6	6-9	9-18	18-21	21-24
Load (KW)	2	6	20	Zero	12	8

b) Explain the following terms. 6 Marks

i) Diversity factor

ii) Plant use factor.

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IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

ADVANCED WELDING TECHNOLOGY

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the classification of welding and allied process in detail.	CO1	10 Marks
	b)	State different types of welded joints	CO1	4 Marks
		(OR)		
2		State the working principle ,process, advantages and disadvantages of; i) Diffusion bonding technique. ii) Resistance welding process.	CO2	14 Marks

UNIT-II

3		Explain the following terms with neat sketch: i) Heat Affected Zone ii) Grain Refined Zone iii) Under bead Zone iv) Partially Transformed Zone	CO2	14 Marks
		(OR)		
4		Describe the metallurgical effects of heat flow in resistance spot welding. Compare and contrast the resistance and fusion welding process.	CO1	14 Marks

UNIT-III

5	a)	What are the different methods of preheating? Explain.	CO3	7 Marks
	b)	Explain the necessity of pre and post weld treatment of the welds.	CO3	7 Marks
		(OR)		
6		Explain the tolerance for metallurgical and operational defects.	CO3	14 Marks

UNIT-IV

7	a)	State the causes and remedies for the following defects. i) Distortion ii) Slag inclusion iii) Lack of penetration	CO3	7 Marks
	b)	Explain leak test by radioactive material.	CO4	7 Marks
		(OR)		
8		Explain the general sources of weld defects.	CO3	14 Marks

UNIT-V

9	a)	What is welding expert system? Discuss about structure and working methodology of expert system.	CO4	7 Marks
	b)	Discuss about synthesis and analysis of welding expert system.	CO4	7 Marks
		(OR)		
10	a)	Discuss about Welding Information Network (WIN).	CO4	7 Marks
	b)	What are the different codes and standards used in the welding? Discuss briefly.	CO4	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

OPTIMIZATION TECHNIQUES

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Explain the following 7 Marks
i) Objective function surfaces.
ii) Classification based on nature of equations involved.

b) Find the maximum and minima, if any, of the following function 7 Marks
$f(x) = 4x^3 - 25x^4 + 40x^3 + 10$.

(OR)

2 a) State and explain the necessary and sufficient conditions for local optimum in case of constrained multi variable optimization problem with equality constraints. 7 Marks

b) Solve the following non linear programming problem using the method of Kuhn-Tucker conditions 7 Marks

max $z = 12x_1 + 21x_2 + 2x_1x_2 - 2x_1^2 - 2x_2^2$

$x_2 \leq 8$

$x_1 + x_2 \leq 10$

$x_1, x_2 \geq 0$.

UNIT-II

3 Solve the following Linear Programming problem by graphical method 14 Marks

Maximize $Z = 3X_1 + 5X_2$

Subject to the constraints:

$X_1 + 2X_2 \leq 2000$, $X_1 + X_2 \leq 1500$, $X_2 \leq 600$

X_1 and $X_2 \geq 0$

(OR)

4 Solve the following Linear Programming problem by Two Phase Method 14 Marks

Minimize $Z = X_1 + X_2$

Subject to the constraints:

$2X_1 + X_2 \geq 4$, $X_1 + 7X_2 \geq 7$

X_1 and $X_2 \geq 0$

UNIT-III

5 Explain how do you convert an unbalanced transportation problem to balanced transportation problem and solve the following transportation problem. 14 Marks

		Stores				Production Capacity
		I	II	III	IV	
Factories	A	2	4	6	11	50
	B	10	8	7	5	70
	C	13	3	9	12	30
	D	4	6	8	3	50
Demand		25	35	105	20	

(OR)

6 A traveling sales man has to visit 5 cities. He wishes to start from a particular city, 14 Marks

visit each city once and then return to his starting point. The travelling cost (in'000 Rs.) of each city from a particular city is given below:

		Top City				
		A	**B**	**C**	**D**	**E**
From City	**A**	∞	2	5	7	1
	B	6	∞	3	8	2
	C	8	7	∞	4	7
	D	12	4	6	∞	7
	E	1	3	2	8	∞

Find the sequence of the visit of the sales man so that the cost is minimum.

UNIT-IV

7 Minimize $f(x_1, x_2) = x_1 - x_2 + 2x_1x_2 + 2x_1^2 + x_2^2$ starting from the point $X_1 = \begin{pmatrix} 0 \\ 0 \end{pmatrix}$ by using steepest descent method. 14 Marks

(OR)

8 Minimize $f(x) = x^5 - 5x^3 - 20x + 5$ by Fibonacci search method in the interval [0, 5] taking N = 6. 14 Marks

UNIT-V

9 Use Dynamic programming to solve the following LPP. 14 Marks

Max $Z = 6x_1 + 7x_2$

Subject to $2x_1 + 3x_2 \leq 12$

$2x_1 + x_2 \leq 8$ and $x_1, x_2 \geq 0$.

(OR)

10 Find the shortest route through network whose nodes are distributed as shown in the following table. 14 Marks

Arc	1-2	1-3	2-3	2-4	2-5	3-4	3-5	3-6	4-5
Distance	1	2	1	5	2	2	1	4	3
Arc	4-6	4-7	5-6	5-7	6-7	6-8	7-8		
Distance	6	8	3	7	5	2	6		

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

ELECTRONIC MEASUREMENTS AND INSTRUMENTATION

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the different types of errors that occur during measurement? Explain.	7 Marks
	b)	Design a Universal shunt to provide an ammeter with current ranges of 10mA, 50mA and 100mA. A D'Arsonval meter movement with an internal resistance of 100Ω and a full scale current of 50μA is used.	7 Marks
		(OR)	
2	a)	Illustrate the construction and working of shunt type ohmmeter.	7 Marks
	b)	A basic D'Arsonval movement with a full scale deflection of 50μA and an internal resistance of 1800 Ω is available. It is to be converted into a 0-1V, 0-5V, 0-25V, 0-225V multirange voltmeter using individual multipliers for each range. Calculate the values of the individual resistors.	7 Marks

UNIT-II

3	a)	How does a square wave generated using square wave generator?	7 Marks
	b)	Describe working of a spectrum analyzer with block diagram?	7 Marks
		(OR)	
4	a)	Explain in detail about the harmonic distortion analyzer.	7 Marks
	b)	Discuss in detail about the frequency synthesizer.	7 Marks

UNIT-III

5	a)	Explain the Measurement procedure of Lissajous patterns with one example.	6 Marks
	b)	Explain the principle and working of a digital storage oscilloscope.	8 Marks
		(OR)	
6	a)	Why delay time is used in vertical section of an oscilloscope?	6 Marks
	b)	Explain the operation of dual beam oscilloscope.	8 Marks

UNIT-IV

7	a)	Draw and derive the balance condition for Kelvin's double bridge.	7 Marks
	b)	Explain in detail about strip chart recorders.	7 Marks
		(OR)	
8	a)	Derive the equations for galvanometer current under unbalanced Wheatstone's bridge.	7 Marks
	b)	What type of bridge circuit is used to measure the insulating properties of capacitors? Derive the equations to measure unknown resistance, capacitance and dissipation factor.	7 Marks

UNIT-V

9		Define the gauge factor in the strain gauge and derive the expression for it.	14 Marks
		(OR)	
10	a)	Explain how temperature is measure using RTD?	7 Marks
	b)	Illustrate Generalized Data Acquisition System with a neat sketch.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

EMBEDDED SYSTEMS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is a design metric and discuss different design metrics?	6 Marks
	b)	What is a single purpose processor? What are the benefits of choosing a single purpose processor over a general purpose processor?	8 Marks
		(OR)	
2	a)	Explain about design productivity gap with an example.	6 Marks
	b)	List and define three main IC technologies. What are the benefits of using each of the three different IC technologies?	8 Marks

UNIT-II

3	a)	Explain the three computational models used to describe Embedded Systems.	6 Marks
	b)	Illustrate the features and considerations of a processor in terms of Programmers View.	8 Marks
		(OR)	
4	a)	How FSMD differs from FSM?	6 Marks
	b)	Differentiate between concurrent processes and sequential program model. Describe the concurrent processor model for a Heartbeat Monitoring system.	8 Marks

UNIT-III

5	a)	Write a short note on i) CAN ii) UART.	8 Marks
	b)	Draw the bus structure and operation of I^2C protocol.	6 Marks
		(OR)	
6	a)	Explain the structure of communication protocol which uses electromagnetic frequencies.	7 Marks
	b)	Outline DB25 pin connector for RS232 standard.	7 Marks

UNIT-IV

7	a)	Explain shared data and priority inversion problems with examples.	8 Marks
	b)	How the semaphore is used as a resource key for critical section?	6 Marks
		(OR)	
8	a)	Explain the message mailbox functioning and relate it to Tasks and ISR.	8 Marks
	b)	Clarify the process of locking and unlocking the scheduler using example.	6 Marks

UNIT-V

9	a)	Describe and compare thumb instruction subset with that of ARM.	7 Marks
	b)	Discuss various techniques to debug an embedded system.	7 Marks
		(OR)	
10	a)	Define an exception. Describe about exception handler and catching an exception.	7 Marks
	b)	Describe the implementation of branch, call and return instructions in ARM instruction set.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

LIGHT WAVE COMMUNICATIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define the relative refractive index difference for an optical fiber and show how it may be related to the numerical aperture.	7 Marks
	b)	An optical fiber has a core refractive index of 1.5. Two lengths of the fiber with smooth and perpendicular (to the core axes) end faces are butted together. Assuming the fiber axes are perfectly aligned, calculate the optical loss in decibels at the joint (due to Fresnel reflection) when there is a small air gap between the fiber end faces.	7 Marks
		(OR)	
2	a)	When the mean optical power launched into an 8km length of fiber is 120μw, the mean optical power at the fiber output is 3μw. Determine i) The overall signal attenuation or loss in decibels through the fiber assuming there are no connectors or splices. ii) The signal attenuation per kilometer for the fiber.	4 Marks
	b)	Explain the principle of light emission. Give the simple structure and characteristics of surface and edge LED's.	10 Marks

UNIT-II

3	a)	A silicon optical fiber with a core diameter large enough to be considered by ray theory analysis has a core refractive index of 1.50 and a cladding refractive index of 1.47. Determine: i) The critical angle at the core-cladding interface. ii) The Numerical Aperture (NA) for the fiber. iii) The acceptance angle in air for the fiber.	6 Marks
	b)	Discuss absorption and linear scattering losses in optical fibers.	8 Marks
		(OR)	
4		Write a short note on fiber connectors and explain types of connectors.	14 Marks

UNIT-III

5	a)	Draw and explain the working of Surface emitting LED.	8 Marks
	b)	Define the internal quantum efficiency of LED and also derive the expression for the same.	6 Marks
		(OR)	
6	a)	With the help of equivalent circuit explain the working of APD.	8 Marks
	b)	What is responsivity? How does it depends on the wavelength of photodiode?	6 Marks

UNIT-IV

7	a)	Discuss in detail about fiber splicing and connectors.	7 Marks
	b)	Derive an expression for coupling of a total power from LED to graded index fiber.	7 Marks

(OR)

8	a)	Draw and explain various fiber alignment and joint losses.	7 Marks
	b)	Discuss briefly about fiber-fiber joints.	7 Marks

UNIT-V

9	Briefly describe the population inversion. With the aid of suitable diagrams discuss the principles of operation of the laser.	14 Marks

(OR)

10	Explain the layered architecture of SONET/SDH with neat diagram.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations, November 2018

DIGITAL CMOS IC DESIGN

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Design the static complementary pull up and pull down networks for the following equations. i) $\overline{(A+B+C)}$ ii) $\overline{(A+B)C}$.	8 Marks
	b)	Explain the properties and VTC of static CMOS inverter.	6 Marks
		(OR)	
2	a)	Write short notes on Charge sharing and NORA logic in CMOS circuits.	8 Marks
	b)	Implement a 3-input NOR gate in Dynamic logic and explain its operation.	6 Marks

UNIT-II

3	a)	Explain in detail about the read and write operations of the SRAM cell.	7 Marks
	b)	How to construct and operate arrays of SRAM?	7 Marks
		(OR)	
4	a)	What are the advantages and disadvantages of DRAM over SRAM?	7 Marks
	b)	How to design a DRAM cell?	7 Marks

UNIT-III

5	a)	Briefly explain about hypothetical Software Radio transmit and receive path.	8 Marks
	b)	What are PLDs? Explain about Programmable logic arrays with an example.	6 Marks
		(OR)	
6	a)	Discuss about a typical Behavioral flow for an ASIC with a neat diagram.	7 Marks
	b)	Define NREs, Recurring cost and Fixed cost and explain.	7 Marks

UNIT-IV

7	a)	Describe he sheet resistance and standard unit of capacitance with different technology.	7 Marks
	b)	Calculate the sheet resistance for an NMOS inverter with Lpu/Wpu=4/1 and Lpd/Wpd=1/1.	7 Marks
		(OR)	
8	a)	Explain the need for layout design rules. Give CMOS based layout design rules.	7 Marks
	b)	Analyze the delay unit and Area Capacitance with an example.	7 Marks

UNIT-V

9	a)	With the help of a schematic explain the operation of a Baugh Wooley multiplier.	7 Marks
	b)	Implement a design of 4-bit ALU.	7 Marks
		(OR)	
10	a)	Design a 4-bit adder using 1-bit full adder, explain the block diagram.	7 Marks
	b)	Explain Booth's algorithm and its modified algorithm with an example.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations, November 2018

TELECOMMUNICATION SWITCHING SYSTEMS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the working of telephone communication with circuit.	7 Marks
	b)	Derive the expression for unavailability of single and dual processor systems.	7 Marks
		(OR)	
2	a)	Classify switching network configurations.	7 Marks
	b)	Explain the principle of crossbar switching with neat diagrams.	7 Marks

UNIT-II

3	a)	Explain subscriber loop systems.	7 Marks
	b)	Explain switching hierarchy and routing.	7 Marks
		(OR)	
4		Explain transmission plan.	14 Marks

UNIT-III

5	a)	Explain Grade of Service and Blocking probability.	8 Marks
	b)	Differentiate In-channel and common channel signaling.	6 Marks
		(OR)	
6	a)	Explain the basic scheme for Common channel signalling.	8 Marks
	b)	An exchange is designed to handle 20000 calls during busy hour. One day the number calls during busy hour is 25000 calls. What is the resulting Grade of Service?	6 Marks

UNIT-IV

7	a)	Explain the transmission channels of BISDN.	7 Marks
	b)	Discuss the header and frame formats of ATM.	7 Marks
		(OR)	
8		Explain the protocol architecture of ISDN.	14 Marks

UNIT-V

9		Discuss in detail ASDL.	14 Marks
		(OR)	
10	a)	Explain the frame format and frame transmission of a SONET signal.	7 Marks
	b)	Discuss about the synchronous transport signals of SONET.	7 Marks

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CODE No.:14BT70501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

COMPILER DESIGN

[Computer Science and Engineering, Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the Compiler Construction tools.	7 Marks
	b)	Explain the input buffer scheme for scanning the source program. How the sentinels can improve its performance? Describe in detail.	7 Marks
		(OR)	
2	a)	Illustrate back end phases of a compiler with suitable example.	7 Marks
	b)	Explain in detail about recognition of tokens.	7 Marks

UNIT-II

3	a)	Outline the difference between Syntax tree and Parse tree.	6 Marks
	b)	Compare and contrast the LL(1) Parser and Recursive Descent Parser.	8 Marks
		(OR)	
4	a)	Bring out the difference between leftmost derivation and right most derivation.	7 Marks
	b)	Consider the grammar and Construct an SLR parsing table for the following grammar. **S→ACB/CbB/Ba**, **A→da/BC**, **B→g/ε**, **C→h/ε**.	7 Marks

UNIT-III

5	a)	Assuming suitable syntax directed definition, show the bottom up evaluation for the expression 3 * 5 + 4n.	7 Marks
	b)	Construct the CFG given below: **S→EN E→E+T|E-T|T T→T*F|T/F|F F→(E)|id N→id** i) Obtain the SDD for the above grammar. ii) Construct the parse tree and syntax tree.	7 Marks
		(OR)	
6	a)	Explain the rules for type checking with an example.	7 Marks
	b)	Explain overloading of functions and operators.	7 Marks

UNIT-IV

7	a)	What are the different kinds of intermediate representations? Explain.	7 Marks
	b)	Write the syntax directed translation for Boolean expressions in control flow representation?	7 Marks
		(OR)	
8	a)	Describe different storage allocation strategies. Explain how to access non local names in any programming environment.	7 Marks
	b)	Discuss the simple stack allocation scheme in detail.	7 Marks

UNIT-V

9 a) What are DAGs and Examine their usefulness in implementing transformations on basic blocks? 7 Marks

b) Generate the code for the following three address using code generation algorithm: 7 Marks

t = a-b
u = a-c
v = t+u
d = v+u
with d live at end.

(OR)

10 a) Explain the peephole optimization. 7 Marks

b) Consider the following basic block of 3-address instructions: 7 Marks

i) a := b + c
ii) x := a + b
iii) b := a - d
iv) c := b + c
v) d := a - d
vi) y := a - d

Construct the DAG representation of this basic block.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

MOBILE COMPUTING

[Computer Science and Engineering,Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	List any four limitations of Mobile Computing.	4 Marks
	b)	Draw the GSM architecture and explain the subsystems involved.	10 Marks
		(OR)	
2	a)	Illustrate the usage of SGSN and GGSN in GPRS architecture.	8 Marks
	b)	Explain the different security services provided by GSM.	6 Marks

UNIT-II

3	a)	With a neat sketch explain the frequency hopping spread spectrum method.	8 Marks
	b)	Describe in detail about the medium access control methods.	6 Marks
		(OR)	
4	a)	Differentiate features of LTE and wimax Rel 1.0 IEEE 802.16e.	7 Marks
	b)	List and explain the techniques used for modulation and multiplexing in 4G network.	7 Marks

UNIT-III

5	a)	Explain the fields of the header in ICMP messages? What are the uses of ICMP messages on the internet?	7 Marks
	b)	Explain the registration of a visiting mobile node on handover. How is the binding between the home agent and foreign agent created?	7 Marks
		(OR)	
6	a)	Why is timeout freezing required in case of mobile nodes? What are the modifications made in data link and TCP layers to enforce timeout freezing?	7 Marks
	b)	Describe slow start of congestion? How can fast recovery take place in congestion avoidance phase?	7 Marks

UNIT-IV

7	a)	List the different Caching invalidation mechanisms. Describe about Data cache maintenance and Web cache maintenance in mobile environments	7 Marks
	b)	Illustrate the Three tier client server architecture for mobile computing and explain	7 Marks
		(OR)	
8	a)	Explain Selective and Distributive indexing. Show how access latency of a record reduces as a result of greater bandwidth requirement from server.	7 Marks
	b)	Describe Hybrid data delivery mechanism. List its advantages and disadvantages? How does it compare to push and pull based data delivery mechanisms.	7 Marks

UNIT-V

9	a)	Describe Service discovery mechanism used in Jini and UPnP.	7 Marks
	b)	Draw the Mobile Agent based architecture and give the advantages of a Mobile Agent.	7 Marks
		(OR)	
10	a)	Describe the features of SyncML Protocol.	7 Marks
	b)	Analyze the different Security issues of Mobile Computing domain and list the different solutions to overcome the problems.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations, November 2018

ADVANCED DATA STRUCTURES

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Explain about Single Linked List. Write an algorithm to insert a new node before and after a particular node in Single Linked List.	14 Marks
		(OR)	
2		Define Doubly Linked List. Write an algorithm to insert a new node before and after a particular node in Doubly Linked List.	14 Marks

UNIT-II

3	a)	Define Queue. Explain the implementation of Queue operations with an example.	10 Marks
	b)	What are the demerits of linear queues?	4 Marks
		(OR)	
4	a)	Explain how the push and pop operations implemented on a linked stack with an example.	10 Marks
	b)	List the applications of Queues.	4 Marks

UNIT-III

5	a)	Write a C program to implement insert and delete operations on a binary search tree.	8 Marks
	b)	By means of an example, explain the process used to identify postorder from inorder and preorder.	6 Marks
		(OR)	
6	a)	What is a threaded binary tree? Explain.	4 Marks
	b)	Explain the insert operation of AVL tree with example.	10 Marks

UNIT-IV

7		Describe the following with suitable example. i) Breadth first search; ii) Depth first search.	14 Marks
		(OR)	
8	a)	Define B tree. Explain the inserting into a B tree with an example.	10 Marks
	b)	Illustrate the applications of B trees.	4 Marks

UNIT-V

9	a)	Write short notes on the following i) hash table; ii) hash function; iii) collision.	9 Marks
	b)	Explain the applications of hashing.	5 Marks
		(OR)	
10		Explain in detail about the linear open addressing and chaining techniques	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

ANALYTICAL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe the working principle of Dissolved oxygen analyzer with a neat sketch.	7 Marks
	b)	Explain the null and direct reading type conductivity meters with a neat diagram.	7 Marks
		(OR)	
2	a)	Discuss the working principle of Silica analyzer.	7 Marks
	b)	Elucidate the working principle of pH meter.	7 Marks

UNIT-II

3		Explain the operation of paramagnetic oxygen analyzer with neat sketch.	14 Marks
		(OR)	
4	a)	Explain the operation of sulphur dioxide measurement using automated wet analysis system.	7 Marks
	b)	Describe the working of hydrogen analyzer.	7 Marks

UNIT-III

5	a)	List the different detectors used in gas chromatography. Explain any one.	7 Marks
	b)	Write a short note on mass detector and thermal detector in liquid chromatography.	7 Marks
		(OR)	
6	a)	Discuss the construction and working principle of liquid chromatography.	7 Marks
	b)	Explain about Argon ionization detector and Electron capture detector.	7 Marks

UNIT-IV

7	a)	Derive Beer - Lambert's law and mention its limitations and applications.	7 Marks
	b)	Discuss the basic functional blocks of a colorimeter.	7 Marks
8	a)	List out the different sources and detectors used in spectrophotometers and their range of wave length.	7 Marks
	b)	Explain the working of FTIR spectrophotometer with neat sketch.	7 Marks

UNIT-V

9	a)	Describe the operation of magnetic deflection type mass spectrometer.	7 Marks
	b)	Explain the operation of ionization chamber.	7 Marks
		(OR)	
10	a)	Describe the operation of quadrupole mass spectrometer.	7 Marks
	b)	Explain the operation of scintillation counter.	7 Marks

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CODE No.:14BT71002 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

BIOMEDICAL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	A cell is in its resting state. It is triggered by an external stimulus. Outline the generation of various potentials due to the application of the stimulus in detail.	7 Marks
	b)	Discuss the problems encountered in measuring a living system.	7 Marks
		(OR)	
2	a)	Discuss in detail, the ECG and EEG biopotentials originated in the human body.	7 Marks
	b)	Briefly explain about various skin surface electrodes used for measurement of bioelectric potentials.	7 Marks

UNIT-II

3	a)	Write short note on physiology of cardiovascular system. With a neat sketch.	7 Marks
	b)	With neat block diagram explain the working of an ECG Machine.	7 Marks
		(OR)	
4	a)	With a neat sketch describe the working of ultrasonic blood flow meter.	7 Marks
	b)	Explain the relation between electrical and mechanical activity of heart.	7 Marks

UNIT-III

5	a)	With neat block diagram explain the working of an EEG recording Machine.	7 Marks
	b)	List out various specifications of EEG and EMG machines.	7 Marks
		(OR)	
6	a)	Explain in detail about mechanism of the nervous system.	7 Marks
	b)	Write a short note on pnemuothograph ventilators.	7 Marks

UNIT-IV

7	a)	Differentiate between internal and external pacemaker.	7 Marks
	b)	Describe about fixed rate pacemaker.	7 Marks
		(OR)	
8		Explain about Haemo dialysis and Peritoneal dialysis.	14 Marks

UNIT-V

9	a)	Briefly explain the ultrasonic imaging in medicine.	7 Marks
	b)	Describe in detail about the components of a CT machine.	7 Marks
		(OR)	
10	a)	Explain the working of Magnetic Resonance Imaging system with the help of neat sketch.	7 Marks
	b)	Write a short note on endoscope.	7 Marks

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CODE No.:14BT71003 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

LOGIC AND DISTRIBUTED CONTROL SYSTEMS

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit

All questions carry equal marks

UNIT-I

1	a)	Discuss the various types of programming terminals and devices used in programmable controller systems.	7 Marks
	b)	Construct a PLC program to illustrate the bottle filling process.	7 Marks
		(OR)	
2	a)	List out the five main components of a PLC system? Briefly describe the functionality of each component	7 Marks
	b)	Explain the Programming method for PLC Using Ladder Logic Diagram	7 Marks

UNIT-II

3	a)	How the data can be transmitted using parallel communication and explain its applications?	7 Marks
	b)	How an Input or Output of PLC can be identified using I/O Addresses Explain with an Example.	7 Marks
		(OR)	
4		Distinguish the terms sinking input and Sourcing output with block diagrams and explain how These are interfacing with the connected equipment.	14 Marks

UNIT-III

5	a)	Explain function block programming for sequence control application With an Example.	7 Marks
	b)	How timers and counters are programmed in PLC? Illustrate with an example.	7 Marks
		(OR)	
6	a)	A main conveyor has two conveyors, A and B feeding it. Feeder conveyor A puts six-packs of canned soda on the main conveyor. Feeder conveyor B puts eight-packs of canned soda on the main conveyor. Both the feeder conveyor has counters that count the number of packs leaving them. Construct a PLC program to give a total can count on the main conveyor.	7 Marks
	b)	List out the various sequence instructions used in PLC and Explain any one sequencer in a detail manner.	7 Marks

UNIT-IV

7	a)	How to select topology and communication protocol of process control application?	7 Marks
	b)	Mention the role of general purpose computers in DCS.	7 Marks
		(OR)	
8	a)	Explain the importance of local unit in DCS.	7 Marks
	b)	Explain about DCS integration with PLC's and computers.	7 Marks

UNIT-V

9	a)	Summarize the interface and backplane bus standards for instrumentation systems.	7 Marks
	b)	Explain the operation and protocol stack of ProfiBus with the help of neat diagrams.	7 Marks
		(OR)	
10	a)	Explain the steps involved in troubleshooting of Foundation Field Bus.	7 Marks
	b)	Describe the operating conditions and advantages of HART communication over conventional.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

MOBILE APPLICATION DEVELOPMENT

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain different Android Development tools.	7 Marks
	b)	What is an Android? Describe and discuss the different Android versions and features.	7 Marks
		(OR)	
2	a)	What is an AVD? Explain the process of creating Android Virtual Device (AVD).	7 Marks
	b)	Discuss the Architecture of the Android OS with neat sketch.	7 Marks

UNIT-II

3	a)	Explain Life cycle of an Activity methods with neat sketch.	7 Marks
	b)	What is a View? Explain different Android supported View Groups with suitable examples.	7 Marks
		(OR)	
4	a)	Discuss the process of adding fragments dynamically with an example.	7 Marks
	b)	Distinguish between fragment and an activity in mobile application.	7 Marks

UNIT-III

5	a)	What is a ListView? Explain how to use ListView in long lists with an example.	7 Marks
	b)	Write an Android App to display the Date and Time by using Picker View.	7 Marks
		(OR)	
6	a)	What is Menu item? Discuss how to create Menu item with your Android App.	7 Marks
	b)	Explain Android App Database connection steps with suitable example.	7 Marks

UNIT-IV

7	a)	Explain how to send email messages from your Android App.	7 Marks
	b)	What are the ways in which you can send SMS message in your Android App.	7 Marks
		(OR)	
8	a)	Write an Android App how to display and switching another Google Map.	7 Marks
	b)	Explain how to connect to the web application using HTTP in you Android App.	7 Marks

UNIT-V

9	a)	Discuss about the importance of Threads in Android.	7 Marks
	b)	Describe about xCode and the iOS SDK.	7 Marks
		(OR)	
10	a)	How to debug iOS Apps? Explain.	7 Marks
	b)	How to build the Derby app in windows phone 7? Discuss in detail.	7 Marks

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CODE No.:14BT71202 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

MULTIMEDIA AND APPLICATION DEVELOPMENT

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain in detail multimedia software tools.	7 Marks
	b)	Write short notes on various image data types.	7 Marks
		(OR)	
2	a)	Explain various color model s in images.	7 Marks
	b)	Write short notes on Digital Video.	7 Marks

UNIT-II

3	a)	Discuss Polymorphism and Dynamic Binding.	7 Marks
	b)	Discuss about Action Script 2.0 data checking.	7 Marks
		(OR)	
4	a)	Explain in detail about how a class is declared with properties and methods.	7 Marks
	b)	Discuss about overriding methods and properties.	7 Marks

UNIT-III

5		Define Exception. Differentiate it with compile time errors and also give one example in Action Script.	14 Marks
		(OR)	
6	a)	Describe about mouse event classes in Action Script.	7 Marks
	b)	Explain the polymorphism and dynamic binding in Action Script.	7 Marks

UNIT-IV

7	a)	Explain how to handle Component events.	7 Marks
	b)	Explain about Hypermedia.	7 Marks
		(OR)	
8	a)	Explain arithmetic coding with an example.	7 Marks
	b)	What is Quantization? Explain.	7 Marks

UNIT-V

9	Write short notes on		
	a)	File Formats.	7 Marks
	b)	Signal to Noise Ratio.	7 Marks
		(OR)	
10	Write short notes on		
	a)	Multimedia over ATM Networks.	7 Marks
	b)	Media-On-Demand.	7 Marks

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IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

MULTIMEDIA AND APPLICATION DEVELOPMENT

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Describe various Multimedia Software Tools.	14 Marks
		(OR)	
2	a)	Briefly explain about color models in images.	7 Marks
	b)	What is multimedia? Explain different components of Multimedia.	7 Marks

UNIT-II

3	a)	Discuss about various data types used in ActionScript.	7 Marks
	b)	Explain about dynamic type checking.	7 Marks
		(OR)	
4	a)	Write about overloading of methods in ActionScript.	7 Marks
	b)	What is casting? Explain with examples.	7 Marks

UNIT-III

5		Write an ActionScript to convert Indian currency to foreign currency.	14 Marks
		(OR)	
6	a)	Discuss Nyquist Theorem.	7 Marks
	b)	Explain Signal to Quantization Noise Ratio.	7 Marks

UNIT-IV

7		Discuss about video compression techniques.	14 Marks
		(OR)	
8	a)	Explain Dictionary based coding with an example.	7 Marks
	b)	Discuss Transform encoding.	7 Marks

UNIT-V

9	a)	Discuss various parameters to improve the quality of multimedia data transmission.	6 Marks
	b)	Explain RTP and RTCP in detail.	8 Marks
		(OR)	
10	a)	Write short notes on video bit rates over ATM.	6 Marks
	b)	Explain Staggered Broadcasting and Pyramid Broadcasting.	8 Marks

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CODE No.:14BT71203 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations, November 2018

SCRIPTING LANGUAGES

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Explain about traditional scripting and modern scripting.	14 Marks
		(OR)	
2	a)	Discuss about the built-in functions in Perl.	7 Marks
	b)	Demonstrate arrays and lists in Perl with examples.	7 Marks

UNIT-II

3	a)	What is a package? Explain the importance of packages in Perl.	7 Marks
	b)	Explain security issues in Perl.	7 Marks
		(OR)	
4	a)	Explain the features of Python.	7 Marks
	b)	Differentiate Lists and Tuples in Python.	7 Marks

UNIT-III

5		Explain standard type operators in python with an example.	14 Marks
		(OR)	
6		Discuss memory management.	14 Marks

UNIT-IV

7	a)	Explain Errors and Exceptions in Python.	8 Marks
	b)	Write a Python script to create, write, read and close a file and Explain about each method.	6 Marks
		(OR)	
8	a)	Write sample programs using the following statements and explain. i) If statement; ii) Else statement; iii) Elif statement; iv) While statement; v) For statement.	8 Marks
	b)	Explain about assertion standard exceptions in Python.	6 Marks

UNIT-V

9	a)	Differentiate restricted execution and terminated execution.	7 Marks
	b)	Explain namespaces with an example.	7 Marks
		(OR)	
10		Discuss various ways of passing arguments to functions with examples.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

SOFTWARE TESTING TECHNIQUES

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define Testing and explain different approaches to perform testing.	7 Marks
	b)	List the important features of testing process.	7 Marks
		(OR)	
2	a)	Enumerate the concept of workbench and discuss with an example how it can be applied for a testing process?	7 Marks
	b)	Discuss the principles of software testing.	7 Marks

UNIT-II

3	a)	Discuss about Software verification and validation.	7 Marks
	b)	State and explain the techniques for finding the defects.	7 Marks
		(OR)	
4		Illustrate the V-Model testing performed at various stages of software testing.	14 Marks

UNIT-III

5	a)	Explain with an example different types of loops in path testing.	7 Marks
	b)	Explain the concept of path sensitizing with an example by considering any real-time application.	7 Marks
		(OR)	
6	a)	Define the following: i) Slices ii) Dices iii) Debugging	4 Marks
	b)	Discuss about different data-flow testing strategies.	10 Marks

UNIT-IV

7		Define KV chart and explain the KV charts for functions of three and four variables with suitable examples?	14 Marks
		(OR)	
8	a)	Explain the rules followed for transition bugs.	7 Marks
	b)	Explain the impact of bugs and discuss its limitations and extensions.	7 Marks

UNIT-V

9	a)	Explain when to use automated test tools. Discuss about different aspects of testing that can be automated.	8 Marks
	b)	Define the characteristics of a good test case and a good test scenario.	6 Marks
		(OR)	
10	a)	Explain the reasons for having planned and documented test plans.	7 Marks
	b)	Differentiate between test plan and quality plan.	7 Marks

CODE No.:14BT71205 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations, November 2018

MACHINE LEARNING

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Demonstrate issues in machine learning.	7 Marks
	b)	Define machine learning. Explain applications of machine learning.	7 Marks
		(OR)	
2		Describe the basic decision tree learning algorithm with example.	14 Marks

UNIT-II

3		Discriminate in-detail representational power and training rule of perceptrons.	14 Marks
		(OR)	
4	a)	Identify the remarks on the back propagation algorithm.	7 Marks
	b)	Describe in detail about hypothesis space search.	7 Marks

UNIT-III

5	a)	Describe Briefly About Naïve Bayes Classification.	10 Marks
	b)	Define Maximum likelihood Estimate.	4 Marks
		(OR)	
6		Describe Expectation Maximization algorithm (EM).	14 Marks

UNIT-IV

7	a)	List and explain learning rule sets.	7 Marks
	b)	Outline learning sets of first order rules. (FOIL)	7 Marks
		(OR)	
8		Explain in detail about Inverting resolution.	14 Marks

UNIT-V

9	a)	Explain in detail PROLOG-EBG learning with perfect domain theories.	7 Marks
	b)	Compare inductive learning and analytical learning.	7 Marks
		(OR)	
10	a)	What is reinforcement learning? Explain the Q function and Q learning algorithm.	8 Marks
	b)	Describe FOCL algorithm in detail with suitable example.	6 Marks

CODE No.:14BT71501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations, November 2018

EMBEDDED SYSTEM PROGRAMMING

[Computer Science and Engineering, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Draw and explain System On Chip (SOC).	7 Marks
	b)	Explain skills required foe an embedded system designer.	7 Marks
		(OR)	
2		Describe design process in embedded system with an example.	14 Marks

UNIT-II

3	a)	Write a C program to interface 8 LED's to port 2 of 8051 and run a binary counter from 0x00 to 0xFF.	7 Marks
	b)	Discuss about the Flag register of 8051 with sketch.	7 Marks
		(OR)	
4	a)	Discuss about different jump instructions with examples.	7 Marks
	b)	Write a C program to configure port P1.1 as input port and port P2.0 as output port.	7 Marks

UNIT-III

5	a)	Describe file and I/O subsystems management in RTOS.	7 Marks
	b)	Discuss about different Timer and Event functions in RTOS.	7 Marks
		(OR)	
6		Discuss the following concepts i) Semaphore functions. ii) Shared data. iii) Pipe functions.	14 Marks

UNIT-IV

7	a)	Discuss about the preprocessor global variable and preprocessor directives in embedded programming.	6 Marks
	b)	Discuss about program elements in embedded programming.	8 Marks
		(OR)	
8	a)	Discuss about the advantages and disadvantages of C++ in embedded programming.	6 Marks
	b)	Discuss about sequential program model of AVCM.	8 Marks

UNIT-V

9	a)	Mention about the Target Hardware Debugging techniques.	7 Marks
	b)	Describe about linking and locating software with an example.	7 Marks
		(OR)	
10	a)	Define Simulator. Differentiate between Emulators and Logic Analyzers.	7 Marks
	b)	Explain the fundamental issues in hardware and software co-design.	7 Marks

CODE No.:14BT71502 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

NETWORK PROGRAMMING

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe the limitations that affect the size of IP datagrams.	7 Marks
	b)	Distinguish between User Datagram Protocol and Transmission Control Protocol.	7 Marks
		(OR)	
2	a)	Explain about Byte ordering Functions.	7 Marks
	b)	Discuss about listen and accept functions.	7 Marks

UNIT-II

3	a)	Discuss about **str_echo** and **str_cli** functions.	7 Marks
	b)	Discuss about signal handling on a POSIX-complaint system.	7 Marks
		(OR)	
4	a)	List out various I/O models that are available in UNIX.	7 Marks
	b)	Explain the need for **getsockopt** and **setsockopt** functions.	7 Marks

UNIT-III

5	a)	Discuss about UDP Echo Server.	7 Marks
	b)	Explain about outgoing interface with UDP.	7 Marks
		(OR)	
6	a)	Discuss about **gethostbyname** function.	7 Marks
	b)	Explain about Domain Name System.	7 Marks

UNIT-IV

7	a)	Discuss about Message queues in detail.	7 Marks
	b)	Discuss about Interprocess communication.	7 Marks
		(OR)	
8	a)	Describe about Namespaces for IPC.	7 Marks
	b)	What is the use of pipes? Discuss the **popen** and **pclose** functions.	7 Marks

UNIT-V

9	a)	Discuss about control Terminals.	7 Marks
	b)	Explain about Terminal line disciplines.	7 Marks
		(OR)	
10	a)	Explain about RPC Transparency issues.	7 Marks
	b)	Discuss in detail about **rlogin**.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

KERNEL PROGRAMMING

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe the any four Networking commands in detail.	CO1	7 Marks
	b)	Distinguish between Internal and External Commands in detail.	CO1	7 Marks
		(OR)		
2	a)	Mention any five general purpose utilities in Unix with examples.	CO1	7 Marks
	b)	Demonstrate how UNIX provides security by file permissions.	CO2	7 Marks

UNIT-II

3	a)	Explain how essential shell programming is handled in Unix.	CO1	7 Marks
	b)	Discuss about String comparisons in shell programming.	CO2	7 Marks
		(OR)		
4	a)	Write a shell script for sample validation and data entry.	CO1	7 Marks
	b)	Illustrate the "for" looping in detail with an example.	CO2	7 Marks

UNIT-III

5	a)	Explain the following file handling system calls in UNIX: i) create; ii) open; iii) read; iv) write	CO1	8 Marks
	b)	Describe the kernel data structures.	CO1	6 Marks
		(OR)		
6	a)	Explain about `mkdir` and `rmdir` system calls.	CO3	6 Marks
	b)	What is meant by security? Explain the different levels of security provided by UNIX.	CO1	8 Marks

UNIT-IV

7	a)	Write an algorithm for **growreg** for changing the size of a region.	CO3	7 Marks
	b)	Discuss about context layers of a sleeping process.	CO1	7 Marks
		(OR)		
8	a)	Write an algorithm for Region allocation.	CO3	7 Marks
	b)	Write an algorithm for **loadreg** system call.	CO3	7 Marks

UNIT-V

9	a)	Write and explain the Algorithm for Allocating a Region.	CO3	7 Marks
	b)	Explain **brk** system call with example.	CO3	7 Marks
		(OR)		
10	a)	Define shell and Explain how it works.	CO1	7 Marks
	b)	Explain Awaiting Process Termination.	CO1	7 Marks

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CODE No.:14BT71504 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations, November 2018

SIMULATION AND MODELING

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Discuss about simulation of Inventory Systems. 7 Marks

b) Define List Processing. Describe the basic properties and operations performed in list. 7 Marks

(OR)

2 a) Consider a computer technical support centre with two support persons Able & Baker. The time between calls with distribution is given in the following table. 14 Marks

Time between arrivals(Minutes)	1	2	3	4
Probability	0.25	0.40	0.20	0.15

The service time distributions of the two people are given in the following table.

Able's service time

Service time (Minutes)	2	3	4	5
Probability	0.30	0.28	0.25	0.17

Baker's service time

Service time (Minutes)	3	4	5	6
Probability	0.35	0.25	0.20	0.20

Simulate the process for 10 customers.

UNIT-II

3 a) With suitable example explain the following: 7 Marks

i) Discrete random variable
ii) Continuous random variable

b) Discuss briefly about useful statistical models 7 Marks

(OR)

4 a) Explain about empirical distribution. 7 Marks

b) With a suitable example explain about binomial distribution. 7 Marks

UNIT-III

5 Explain the characteristics of queuing system. List the different queuing notations. 14 Marks

(OR)

6 Discuss in detail about long-run measure of performance of queuing system with suitable examples. 14 Marks

UNIT-IV

7 a) Describe the method of generating random numbers using linear congruential method? 7 Marks

b) Test the uniformity for the sequence of numbers 0.54, 0.73, 0.98, 0.11, 0.68 in the interval [0, 1] using Kolmogorov - Smirnov test. 7 Marks

(OR)

8	a)	Discuss about acceptance-rejection technique.	7 Marks
	b)	Describe the process to generate random variates of Uniform Distribution.	7 Marks

UNIT-V

9	a)	List out the precautions to be taken while collecting the data.	7 Marks
	b)	What are the parameter estimators for Poisson, Exponential and Normal Distributions?	7 Marks

(OR)

10		Describe the general strategy to obtain Batch means for interval estimation in steady state simulation?	14 Marks

CODE No.:14BT71507 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

SOFTWARE PROJECT MANAGEMENT

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain various objectives used for measurement of software size.	CO1	7 Marks
	b)	Describe five improvements to the basic waterfall process.	CO1	7 Marks
		(OR)		
2	a)	What is the impact of the documentation and review meetings? Explain about requirements driven functional decomposition.	CO2	7 Marks
	b)	Compare Iterative and Incremental model to that of waterfall model.	CO2	7 Marks

UNIT-II

3		Explain the top five principles of a modern process with relevant figure.	CO3	14 Marks
		(OR)		
4		Describe various phases of the life cycle process.	CO1	14 Marks

UNIT-III

5		Explain typical software development plan outline and work break down structure.	CO4	14 Marks
		(OR)		
6		Describe a technical perspective of software architecture with relevant figures.	CO2	14 Marks

UNIT-IV

7	a)	Write about results of major milestones in a modern process.	CO2	7 Marks
	b)	Explain about periodic status assessment.	CO2	7 Marks
		(OR)		
8	a)	Discuss about initial operational capability milestone and product release milestone.	CO3	7 Marks
	b)	Discuss automation and tool components that support the process workflows.	CO3	7 Marks

UNIT-V

9	a)	What is process discriminant? Explain the factors involved in tailoring the process?	CO3	7 Marks
	b)	Explain about next generation software economics.	CO3	7 Marks
		(OR)		
10	a)	Explain about modern software economics.	CO4	7 Marks
	b)	Discuss in detail about Quality indicators.	CO4	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

CRYPTOGRAPHY AND NETWORK SECURITY

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the OSI security architecture in detail.	10 Marks
	b)	With neat sketches explain different types of security attacks.	4 Marks
		(OR)	
2	a)	With examples explain the requirements of security.	4 Marks
	b)	Explain the algorithm and possible attacks for caesar cipher, monoalphabetic cipher and Playfair cipher.	10 Marks

UNIT-II

3	a)	Which block cipher AES or DES follows Feistel cipher structure? Justify your answer.	7 Marks
	b)	Summarize cryptanalysis on DES.	7 Marks
		(OR)	
4	a)	Apply RSA algorithm to perform encryption and decryption for the following: $p = 3$; $q = 11$, $e = 7$; $M = 5$.	7 Marks
	b)	Why Cipher feedback mode is preferable than cipher block chaining mode?	7 Marks

UNIT-III

5	a)	Illustrate message authentication tied to ciphertext with neat diagram.	7 Marks
	b)	Discuss Kerberos and name its Servers and briefly explain duties of each server.	7 Marks
		(OR)	
6	a)	Illustrate HMAC structure with a neat diagram.	7 Marks
	b)	Distinguish direct and arbitrated digital signatures.	7 Marks

UNIT-IV

7	a)	Describe IP Security Architecture with neat Diagram.	7 Marks
	b)	Explain in detail about payment processing techniques in SET.	7 Marks
		(OR)	
8	a)	Differentiate between SSL and SET.	8 Marks
	b)	Explain about web security considerations.	6 Marks

UNIT-V

9	a)	Mention various types of intruders. Describe the intrusion detection techniques.	8 Marks
	b)	Write about Circuit level and application level firewalls.	6 Marks
		(OR)	
10	a)	What is password management? How password is protected in UNIX operating system?	4 Marks
	b)	Write in detail about malicious software's and counter measures.	10 Marks

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CODE No.:14BT81203 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

.NET TECHNOLOGIES

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is the role of CLR in .NET framework? Explain any five services offered by CLR.	CO1	7 Marks
	b)	Discuss the decision constructs in C# with suitable example and Syntax.	CO1	7 Marks
		(OR)		
2	a)	List down commonly used namespaces in .NET and briefly explain any two namespaces.	CO1	7 Marks
	b)	Describe the basic input, output operations, formatting console, output and numerical data with system console.	CO1	7 Marks

UNIT-II

3	a)	Discuss the processing mechanism of multiple exceptions in C#.	CO1	7 Marks
	b)	Demonstrate the Polymorphic support in C# with suitable example.	CO3	7 Marks
		(OR)		
4	a)	Discuss the role and usage of constructors in C# with suitable example.	CO3	7 Marks
	b)	Discuss the Pillars of Object Oriented Programming.	CO1	7 Marks

UNIT-III

5	a)	Write a C# program which creates Windows Form with one Button, Textbox. When Button is clicked it should display ColorDialog box. When a color is selected from the dialog box, it should set as background color of the Textbox.	CO2	7 Marks
	b)	Describe the execution of custom generic methods, structures and classes with suitable examples.	CO1	7 Marks
		(OR)		
6	a)	Write and explain properties and methods of OpenDialog and SaveDialog with example.	CO1	7 Marks
	b)	Discuss the Event handling mechanism in C#.	CO1	7 Marks

UNIT-IV

7	a)	What is ADO Technology? How does it differ from ADO.Net Technology? Explain.	CO1	7 Marks
	b)	Describe the process of binding DataTable objects to Windows Forms GUI.	CO1	7 Marks
		(OR)		
8	a)	Explain usage of following ADO.Net objects with their methods. i) SqlDataAdapter ii) SqlCommand iii) Dataset	CO1	7 Marks
	b)	Write a C# program to show the working of DataRows as actual data in a table.	CO2	7 Marks

UNIT-V

9	a)	What is state management? Explain Session and Cookie with suitable example.	CO1	7 Marks
	b)	Write the role of Client Side Scripting with suitable examples.	CO1	7 Marks
		(OR)		
10	a)	What is a web service? Create a web service to add two numbers. Also give code to consume it.	CO2	7 Marks
	b)	Illustrate the process of building a single file ASP.Net webpage.	CO1	7 Marks

CODE No.:14BT81503 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Regular/Supplementary Examinations November - 2018

HUMAN COMPUTER INTERACTION

[Computer Science and Engineering, Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Discuss the importance of good design with suitable examples.	14 Marks
		(OR)	
2	a)	Summarise the benefits of good design with suitable examples.	7 Marks
	b)	State the reasons for which web interface has become popular.	7 Marks

UNIT-II

3	a)	Discuss the users psychological characteristics in the design of a system.	7 Marks
	b)	Briefly explain the human interaction speeds.	7 Marks
		(OR)	
4	a)	What are the common usability problems? Explain in detail.	7 Marks
	b)	Compare and contrast direct and indirect methods of requirements analysis.	7 Marks

UNIT-III

5		Outline various Design Goals that makes an interface easy and pleasant to use.	14 Marks
		(OR)	
6	a)	Explain the importance of various guidelines for a Web page that will facilitate scanning.	7 Marks
	b)	Compare the technological considerations in interface design with graphical and web systems.	7 Marks

UNIT-IV

7	a)	What are the various components of a window? Explain in detail.	7 Marks
	b)	Differentiate selection of screen based controls and device based controls.	7 Marks
		(OR)	
8	a)	What are the possible uses of colors and problems associated with it give guidelines to choose proper color for the web page?	7 Marks
	b)	Write short notes on types of icons.	7 Marks

UNIT-V

9	a)	Discuss various features of building tools.	7 Marks
	b)	How to construct more robust systems using software engineering tools?	7 Marks
		(OR)	
10	a)	Explain the important features of visual display unit.	7 Marks
	b)	Show the state chart of simple bank transition system showing grouping of states.	7 Marks

CODE No.:14BT6HS01 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

BANKING AND INSURANCE

[Civil Engineering, Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	Define Banking? Explain its origins and growth.	14 Marks
	(OR)	
2	What are the functions of RBI? Briefly list out how RBI implements open market operations.	14 Marks

UNIT-II

3	Explain how a business organization can utilize negotiable instruments with an appropriate example.	14 Marks
	(OR)	
4	What is meant by Money laundering? Briefly explain the anti money laundering act in India.	14 Marks

UNIT-III

5	Explain various types of e-payment system in India.	14 Marks
	(OR)	
6	Discuss briefly any two business models for development of the business.	14 Marks

UNIT-IV

7	Define the word Insurance. What are the major elements of Insurance contract?	14 Marks
	(OR)	
8	Discuss the concept of Risk and Uncertainty in Insurance contract.	14 Marks

UNIT-V

9	Discuss the role of IRDA on Insurance business in India.	14 Marks
	(OR)	
10	What are the major principles of Insurance? Write a brief note on the entry of private insurance players in Indian insurance.	14 Marks

CODE No.:14BT41501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

COMPUTER GRAPHICS

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe the colour CRT monitors.	9 Marks
	b)	List the differences between Vector scan and Raster scan display.	5 Marks
		(OR)	
2	a)	Use simple DDA algorithm find the all pixels between (0,0) to (-6, -6).	7 Marks
	b)	Write an algorithm to fill the polygon area using flood fill method.	7 Marks

UNIT-II

3	a)	Derive a transformation matrix to rotate an object with respect to a fixed point.	7 Marks
	b)	Discuss in detail transformations between coordinate systems.	7 Marks
		(OR)	
4	a)	Explain in detail viewing pipeline.	7 Marks
	b)	Illustrate Cohen-Sutherland line clipping process with suitable example.	7 Marks

UNIT-III

5	a)	Write a short note on Polygon surfaces.	7 Marks
	b)	Explain in detail about Quadric surfaces.	7 Marks
		(OR)	
6		Compare and contrast Bezier curves and B-Splines curves.	14 Marks

UNIT-IV

7		Investigate 3D-Shear and Reflection Transformations of an object. Generate Matrix Representations and Homogeneous Coordinates	14 Marks
		(OR)	
8	a)	Show that the composition of two rotations is additive by concatenating the matrix representations for R(θ1) and R(θ2) to obtain R(θ1). R(θ2)	7 Marks
	b)	Give any two uses of clipping.	7 Marks

UNIT-V

9	a)	Explain BSP-Tree methods in visible surface detection methods.	7 Marks
	b)	Examine the purpose depth sorting algorithms.	7 Marks
		(OR)	
10		Demonstrate Octree methods in visible surface detection methods	14 Marks

CODE No.:14BT51201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

COMPUTER NETWORKS

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss about computer networks requirements and applications.	6 Marks
	b)	Explain the dissimilarities between Packet Switching and Circuit Switching.	8 Marks
		(OR)	
2	a)	Explain the TCP/IP reference model architecture.	6 Marks
	b)	State the various guided and unguided media implemented in networks.	8 Marks

UNIT-II

3	a)	What is the need for Manchester encoding? Write down its limitations.	6 Marks
	b)	Compare and contrast Stop-and-Wait and Sliding window protocols.	8 Marks
		(OR)	
4	a)	With an example, explain the error detection method using parity checks.	8 Marks
	b)	Write the algorithm for computing the checksum.	6 Marks

UNIT-III

5	a)	Describe the concept of Link state routing.	7 Marks
	b)	Define congestion. Explain different congestion control algorithms.	7 Marks
		(OR)	
6	a)	How optimality principle achieved in shortest path routing?	7 Marks
	b)	Differentiate IP V4 and IP V6.	7 Marks

UNIT-IV

7	a)	List and describe Transport service primitives.	5 Marks
	b)	Illustrate UDP with relevant examples.	9 Marks
		(OR)	
8	a)	Analyze and explain TCP connection establishment and TCP connection Release.	7 Marks
	b)	Describe TCP congestion control and the future of TCP.	7 Marks

UNIT-V

9	a)	Explain Domain Name System.	9 Marks
	b)	Write short notes on Dynamic web documents.	5 Marks
		(OR)	
10	a)	Explain substitution techniques.	7 Marks
	b)	Describe one-time pads.	7 Marks

CODE No.:14BT51201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

COMPUTER NETWORKS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write short notes on uses of Computer Networks.	5 Marks
	b)	Explain TCP/IP Reference Model in detail.	9 Marks
		(OR)	
2	a)	Explain Network Hardware with relevant figures.	9 Marks
	b)	Describe Wireless Transmission.	5 Marks

UNIT-II

3	a)	Describe design issues of Data Link Layer.	5 Marks
	b)	Explain Error Detection and Correction techniques.	9 Marks
		(OR)	
4	a)	How CSMA is useful in flow control? Explain in detail.	7 Marks
	b)	Write short notes on DLL switching.	7 Marks

UNIT-III

5	a)	List and explain Network layer design issues.	5 Marks
	b)	Illustrate Hierarchical routing algorithm.	9 Marks
		(OR)	
6	a)	Write short notes on flooding routing algorithm.	6 Marks
	b)	Describe IP Protocol and IP addresses.	8 Marks

UNIT-IV

7	a)	What are the elements of transport protocol?	7 Marks
	b)	Explain the connection release procedure of transport layer.	7 Marks
		(OR)	
8	a)	Describe the transmission policy of transport layer.	7 Marks
	b)	Describe the format of TCP segment.	7 Marks

UNIT-V

9	a)	Write about Web based E-Mail application and its related protocols.	6 Marks
	b)	Explain semantics of various fields in DNS message.	8 Marks
		(OR)	
10	a)	Describe architectural overview of WWW.	7 Marks
	b)	Explain Transportation techniques.	7 Marks

CODE No.:14BT51501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

OPERATING SYSTEMS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is a System Call? Write about the purpose of a system call.	7 Marks
	b)	Explain in detail about the dual mode operation of OS.	7 Marks
		(OR)	
2	a)	Distinguish between thread and process.	6 Marks
	b)	What are long-term, short-term and medium-term schedulers?	8 Marks

UNIT-II

3	a)	What is starvation problem? Suggest a solution for it.	6 Marks
	b)	Explain how to use semaphores for process synchronization.	8 Marks
		(OR)	
4	a)	By means of an example, describe the role of Resource-Allocation and Wait-for graphs in deadlock detection.	6 Marks
	b)	Explain in detail about deadlock avoidance techniques.	8 Marks

UNIT-III

5	a)	Explain the basic concepts of segmentation.	7 Marks
	b)	Write about the performance of demand paging.	7 Marks
		(OR)	
6	a)	What is demand paging? Explain its concept.	5 Marks
	b)	Describe Page Replacement algorithms with an example.	9 Marks

UNIT-IV

7	a)	Describe the two levels and tree type directory structures in detail.	7 Marks
	b)	Compare the following file access methods. i) Sequential access. ii) Direct access.	7 Marks
		(OR)	
8	a)	Compare the performance of write operations achieved by a RAID Level 5 organization with that achieved by a RAID Level 1 organization.	7 Marks
	b)	Is there any way to implement truly stable storage? Explain your answer.	7 Marks

UNIT-V

9	a)	What are the various kinds of performance overheads associated with servicing an interrupt?	7 Marks
	b)	What are the advantages and disadvantages of supporting memory mapped I/O to device control registers?	7 Marks
		(OR)	
10	a)	What are the goals and principles of protection?	7 Marks
	b)	Explain the following. i) Revocation of access rights. ii) Access Matrix.	7 Marks

CODE No.:14BT60206 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

ADVANCED CONTROL SYSTEMS

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Design a lead compensator for unity feedback system with open loop transfer function $\frac{K}{s(s+1)}$ for the specifications of $K_v = 10$ $\mathbf{s^{-1}}$ and $\emptyset_m = 35^0$. 14 Marks

(OR)

2 a) Explain Tuning rules for PID controllers. 7 Marks

b) Explain about two-degree-of-freedom control. 7 Marks

UNIT-II

3 a) Find the singular points for the following system $\ddot{x} + 2\dot{x} + 5x = 0$. 7 Marks

b) Explain the procedure for constructing phase plane trajectory using delta method. 7 Marks

(OR)

4 a) Derive Describing function for Dead zone and Saturation. 7 Marks

b) Explain to find stability of a Non-linear system using Describing function method. 7 Marks

UNIT-III

5 a) State and explain Lyapunov stability analysis of control system. 8 Marks

b) Check the positive definite for given quadratic form as follows: 6 Marks

$$Q = x_1^2 + 4x_2^2 + x_3^2 + 2x_1x_2 - 6x_2x_3 - 2x_1x_3$$

(OR)

6 a) Describe Krasovskii method for constructing a Lyapunov function. 7 Marks

b) Explain the Direct method of Lyapunov for finding stability. 7 Marks

UNIT-IV

7 a) Explain the concept of state feedback in control systems. 6 Marks

b) Discuss the optimal regulator design by continuous time algebraic riccatti equation. 8 Marks

(OR)

8 a) A linear system is described by the following state equations 10 Marks

$$\dot{X} = \begin{bmatrix} 0 & 1 & 0 \\ 0 & -1 & 1 \\ 0 & 0 & -2 \end{bmatrix} X + \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix} u$$

$$Y = \begin{bmatrix} 1 & 0 & 0 \end{bmatrix} X$$

Determine the control law that places the closed loop poles at $s = -1 \pm j1$ and $s = -0.2$.

b) State and explain Ackermann's formulae. 4 Marks

UNIT-V

9 a) What are the factors required to design of an optimal controller. 7 Marks

b) Discuss the state regulator problem in the design of optimal controller. 7 Marks

(OR)

10 Find the variation of the functional $J(x) = \frac{1}{2}\int_0^1 (x^2(t) + 2x(t))dt$ where x be a continuous scalar function defined for $t_f(0,1)$. 14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

DIGITAL SIGNAL PROCESSING

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Find the DTFT of the sequence $x(n)= \cos(n\pi/3)u(n)$. 7 Marks

b) Define causality and stability of an LTI system and state the conditions for stability. 7 Marks

(OR)

2 a) Find the inverse z-transform of $x(z)= \dfrac{z^{5}-3}{1-z^{-5}} \qquad |z|>1.$ 7 Marks

b) Find the DTFT of the sequence $x(n)=\alpha^{n}\sin(nw_0)u(n).$ 7 Marks

UNIT-II

3 a) Develop the relationship FT to Z transform. 7 Marks

b) For given sequence $x(n)$ = {1, 2, 1, 2, 1, 2, 1, 2}, find 8 point *DFT* using *DIT FFT*. 7 Marks

(OR)

4 a) Sample the signal x(t)=1+cos(2πt) at its nyquist rate and obtain its discrete sequence. Determine 4-point DFT using DIT-FFT algorithm. 7 Marks

b) Compute the IDFT of the sequence 7 Marks
$X(k)$ = {7, –0.707 – j0.707, – j, 0.707–j0.707, 1, 0.707 + j0.707, j, –0.707 + j0.707} using DIF-FFT algorithm.

UNIT-III

5 a) Explain the IIR filter design using Bilinaer transformation and compare with that of impulse invariance technique. 6 Marks

b) Design a Butterwort digital IIR filter using Bilinear tranformation for the following requirements $H(e^{jw})=\begin{cases} 0.87\le |H(e^{jw})|\le 1.0 & 0\le w\le 0.25\pi \\ |H(e^{jw})|\le 0.35 & 0.375\pi \le w\le \pi \end{cases}$ 8 Marks

using Bilinear transfermation methods, assume T = 1sec.

(OR)

6 a) Discuss about different methods of realization of IIR systems. 7 Marks

b) Design IIR digital Butterworth low pass filter to satisfy the constraints 7 Marks
$0.707 \le |H(\omega)| \le 1$; for $0 \le \omega \le 0.2\pi$
$|H(\omega)| \le 0.1$; for $0.5\pi \le \omega \le \pi$
Use Impulse invariant transformation, with T=1sec.

UNIT-IV

7 a) Discus about characteristics of symmetric and anti-symmetric FIR filters. 7 Marks

b) Design a Linear phase band pass FIR filter with a cutoff frequencies in the range 0.4 π to 0.6π rad/sample by taking 7 samples of hamming window. Take N=11. 7 Marks

(OR)

8 a) Explain the design of linear phase FIR filter by the Frequency sampling method. 5 Marks

b) Obtain the Cascade and parallel form of realizations for the following transfer function $H(z) = \frac{16(1+z)z^2}{(4z^2 - 27z + 1)(4z + 3)}$. 9 Marks

UNIT-V

9 a) Distinguish synchronous and asynchronous mode of operation of serial ports. 7 Marks

b) Explain special addressing modes in Programmable DSPs. 7 Marks

(OR)

10 a) Explain about MAC in detail. 7 Marks

b) Explain the VLSI architecture and discuss its advantages and disadvantages. 7 Marks

CODE No.:14BT60403 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

VLSI DESIGN

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain different fabrication process of CMOS transistor.	8 Marks
	b)	Illustrate the relationship between Ids versus Vds of MOSFET	6 Marks
		(OR)	
2	a)	Explain the fabrication of PMOS transistor and its substrate fabrication process.	8 Marks
	b)	Explain the latch up prevention techniques.	6 Marks

UNIT-II

3	a)	Explain the scaling factors for device parameters in constant E and V model.	7 Marks
	b)	Derive the expression for rise time and fall time delay for CMOS inverter.	7 Marks
		(OR)	
4	a)	Describe three sources of wiring capacitances. Discuss the wiring capacitance on the performance of a VLSI circuit.	8 Marks
	b)	Define constant voltage scaling. Give necessary equations.	6 Marks

UNIT-III

5	a)	Explain the carry look ahead adder with one example.	8 Marks
	b)	Explain about LFSR.	6 Marks
		(OR)	
6	a)	Design the Booth Multiplier for A=1001 and B=1001.	8 Marks
	b)	Explain about comparators.	6 Marks

UNIT-IV

7	a)	Explain about Internal ROM Structure and give an example.	6 Marks
	b)	Draw the diagram for 6 Transistor SRAM and explain the operation.	8 Marks
		(OR)	
8	a)	Discuss the different methods of programming of PALs.	7 Marks
	b)	Explain programmable interconnect.	7 Marks

UNIT-V

9	a)	Explain about Testers and Test fixtures.	7 Marks
	b)	Explain about logic verification principles.	7 Marks
		(OR)	
10		Explain the following Manufacturing Test principles.	14 Marks
		i) Fault Models. ii) Observability.	
		iii) Controllability. iv) Repeatability.	

CODE No.:14BT60431 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

PRINCIPLES OF COMMUNICATION

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Differentiate analog pulse and digital signals with proper examples.	8 Marks
	b)	Find the Fourier transform of a single valued exponential function $e^{-bt}u(t)$ and draw the spectrum where $u(t)$ is the unit step function.	6 Marks

(OR)

2	a)	Prove that the auto-correlation function and energy density spectrum form a Fourier transform pair.	6 Marks
	b)	Explain about the Dirichlet's condition for Fourier series.	8 Marks

UNIT-II

3	a)	Explain the concept of frequency translation using the spectrum of DSB-SC wave.	6 Marks
	b)	In an AM-SC system, modulating signal is a single tone sinusoidal signal $4\cos 2\pi 10^3$, which Modulates carrier signal $6\cos 2\pi 10^6 t$. Write the equation of the modulated wave. Plot the two Sided spectrum of the modulated wave. Calculate the amount of power transmitted.	8 Marks

(OR)

4	a)	An angle modulated signal has the form $v(t) = 100\cos[2\pi f_c t + 4 \text{ Sin } 2000\pi t]$ where fc=5MHz i) Determine the average transmitted power. ii) Determine the peak phase deviation. iii) Determine the peak frequency deviation. iv) Is this FM or a PM signal? Explain.	8 Marks
	b)	Explain the detection of FM wave using balanced frequency discrimination.	6 Marks

UNIT-III

5	a)	State and prove sampling theorem with necessary diagrams.	8 Marks
	b)	Differentiate PPM and PWM.	6 Marks

(OR)

6	a)	Explain the demodulation of PAM signals.	8 Marks
	b)	Compare TDM and FDM.	6 Marks

UNIT-IV

7	a)	Discuss about the block diagram of PCM and explain each block in detail.	8 Marks
	b)	Explain the Generation and Detection of Coherent Binary PSK Signals.	6 Marks

(OR)

8	a)	Derive the probability of error for FSK.	7 Marks
	b)	Obtain the probability of error for Matched filter.	7 Marks

UNIT-V

9	a)	Generate the code words for (7, 4) hamming code.	8 Marks
	b)	State and prove the properties of syndrome decoding.	6 Marks

(OR)

10	a)	Draw the diagram of the rate convolutional encoder with generator polynomial: $g(1)(D) = 1 + D$ and $g(2)(D) = 1 + D + D^2$. And compute the encoder output for input sequence 101101.	8 Marks
	b)	Describe a decoding procedure for linear block code.	6 Marks

CODE No.:14BT61201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

DATAWAREHOUSING AND DATA MINING

[Computer Science and Engineering, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the characteristics of data warehouse and data mining.	7 Marks
	b)	Define data mining problem/issues.	7 Marks
		(OR)	
2	a)	Define data warehouse and modeling.	7 Marks
	b)	Define data ware house and explain OLAP operations.	7 Marks

UNIT-II

3	a)	What is preprocessing and why is it required to preprocess the data.	7 Marks
	b)	Define data cleaning. Explain basic methods for data cleaning.	7 Marks
		(OR)	
4		Write short notes for the following. i) Data Transformation. ii) Data Descretization.	14 Marks

UNIT-III

5	a)	Explain the concept of multidimensional association rule mining.	6 Marks
	b)	With a suitable example, describe FP-Growth algorithm.	8 Marks
		(OR)	
6	a)	Discuss the importance of discovering the association rules.	7 Marks
	b)	Explain types of Association Rules with example.	7 Marks

UNIT-IV

7	a)	Write and explain decision tree induction algorithm.	8 Marks
	b)	Explain how to measure the accuracy of classifier.	6 Marks
		(OR)	
8	a)	Discuss in detail about attribute selection method with example.	7 Marks
	b)	Describe Bayesian Belief Networks.	7 Marks

UNIT-V

9	a)	Explain Density based method with example.	7 Marks
	b)	Differentiate between partitioning and Hierarchical clustering methods.	7 Marks
		(OR)	
10	a)	What is a cluster? Discuss briefly about various types of Clustering and clusters.	6 Marks
	b)	Describe in detail about different types of data used in cluster analysis.	8 Marks

CODE No.:14BT70101 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

STEEL STRUCTURES

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	Explain how limit state method of design differs from working stress method of design.	14 Marks
	(OR)	
2	What are the various loads that are to be considered while designing a structural member? Explain.	14 Marks

UNIT-II

3	Design a fillet weld connection to join two plates of size 200 x 10mm and 300 x 10mm of grade Fe410 to mobilize full plate tensile strength of larger plate using shop fillet welds.	14 Marks
	(OR)	
4	Two ISF sections 200mm x 10mm each and 1.5m long are to be jointed to make a member lengthy of 3.0m. Design a butt joint with the bolts arranged in the diamond pattern. The flats are supposed to carry a factored tensile force of 450kN. Steel is of grade Fe 410. 20mm diameter bolts of grade 4.6 are used to make the connections. Also, determine the net tensile strength of the main plate and cover plates.	14 Marks

UNIT-III

5	Design a single angle to carry a tension of 150kN. The end connection is to be done using M20 bolts of product Grade C and property class 4.6. The yield and ultimate strengths of the steel are 250MPa and 410MPa, respectively.	14 Marks
	(OR)	
6	Design a single angle discontinuous strut to carry a factored axial compressive load of 65kN. The length of strut is 3.0m between intersections. It is connected to 12mm thick gusset plate by 20mm diameter 4.6 grade bolts. Use steel of grade Fe 410.	14 Marks

UNIT-IV

7	Design a built – up column 9m long to carry a factored axial load compressive load of 1200KN. The column is restrained in position but not in direction at both the ends. Design the column with connecting system as battens with bolted connections. Use two channel sections back to back. Use steel of grade Fe410.	14 Marks
	(OR)	
8	A column of 9m effective length has to support an axial factored load of 1500kN. Design the column which shall consist of two channels placed back to back at suitable spacing. Design also single angle lacing system.	14 Marks

UNIT-V

9	A column section ISHB 350@661.2 N/m carries an axial compressive factored load of 2200KN. Design a suitable welded gusset base, the base rests on M20 grade of concrete.	14 Marks
	(OR)	
10	Design a gusseted base for a column ISHB 350 @710N/m with two plates 450mm x 20mm carrying a factored load of 3600kN. The column is to be supported on concrete pedestal to be built with M20 concrete.	14 Marks

CODE No.:14BT70102 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

WATER RESOURCES ENGINEERING

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Briefly explain various water application methods with neat sketches.	7 Marks
	b)	Explain various irrigation efficiencies.	7 Marks
		(OR)	
2	a)	Define duty and explain various factors effecting duty.	7 Marks
	b)	A field channel has a culturable commanded area of 2000 hectares. The intensity of irrigation for gram is 30% and for wheat is 50%. Gram has a kor period of 18 days and kor depth of 12cm, while wheat has 15 days and kor depth of 15cm. Calculate the discharge of field channel.	7 Marks

UNIT-II

3	a)	What are the causes of failure of weirs and their remedial measures? Explain them in detail.	7 Marks
	b)	Explain Bligh's theory in detail.	7 Marks
		(OR)	
4	a)	Explain the functions of upstream and downstream sheet piles.	7 Marks
	b)	What are the functions of launching apron and inverted filter of a weir and explain in detail.	7 Marks

UNIT-III

5	a)	Explain the procedure of estimating the reservoir capacity by using Mass inflow curve.	7 Marks
	b)	Discuss the various failures of gravity dams.	7 Marks
		(OR)	
6	a)	Discuss the physical factors governing the selection of a particular type of a dam.	7 Marks
	b)	Describe the zoning of storage of a reservoir.	7 Marks

UNIT-IV

7	a)	Explain different types of earth dams with neat sketches.	7 Marks
	b)	Explain various causes of failure of earth dams with remedial measures.	7 Marks
		(OR)	
8	a)	Explain the hydraulic and seepage failures of earth dams and possible remedies.	7 Marks
	b)	State the criteria for safe design of earth dams. Mention various factors of safety in design and give techniques to make dam safe.	7 Marks

UNIT-V

9	a)	During the construction of a canal, which type of cross drainage works shall possibly come across?	7 Marks
	b)	Briefly state the site conditions required for construction of a cross drainage work.	7 Marks
		(OR)	
10	a)	Discuss the factors governing the suitable type of a cross drainage work.	7 Marks
	b)	Describe the various steps for the design of a siphon-aqueduct.	7 Marks

CODE No.:14BT70103 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

GEOSPATIAL TECHNOLOGIES

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define the following. i) Tilt. ii) Principlepoint. iii) Isocenter.	6 Marks
	b)	Derive an expression for the scale of a vertical photograph.	8 Marks
		(OR)	
2	a)	Define mosaic and explain the classification of mosaic.	7 Marks
	b)	What are the different types of Aerial cameras used in Photogrammetry? Explain.	7 Marks

UNIT-II

3		What are the basic process and elements involved electromagnetic remote sensing of earth resources? Explain them.	14 Marks
		(OR)	
4	a)	Explain the following. i) Temporal resolution. ii) Spatial resolution. iii) Spectral resolution.	7 Marks
	b)	Explain the basics of Visual interpretation of imageries.	7 Marks

UNIT-III

5	a)	Define GIS and explain briefly about different components of GIS.	7 Marks
	b)	What are the functions of DBMS and explain in brief?	7 Marks
		(OR)	
6	a)	Write short notes on GIS architecture.	7 Marks
	b)	What are the different map projections? Explain.	7 Marks

UNIT-IV

7		Evaluate the various network analysis tools used in GIS.	14 Marks
		(OR)	
8		What are the three segments of GPS? Describe them briefly.	14 Marks

UNIT-V

9		Explain the role of GIS in water resources management.	14 Marks
		(OR)	
10		Explain how GIs can used for; i) Highway alignment. ii) Traffic congestion analysis.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

TRANSPORTATION ENGINEERING–II

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Explain various types of road accidents and causes in detail. 7 Marks

b) Analyse the relationship between speed, travel time, volume, density and capacity through formulae. 7 Marks

(OR)

2 a) Explain various factors affecting skid resistance. 7 Marks

b) Explain Road user and vehicular characteristics. 7 Marks

UNIT-II

3 a) Define level of service and explain different levels of service. 7 Marks

b) What are various objectives of volume studies and explain the method of determination of volume. 7 Marks

(OR)

4 a) Explain traffic capacity, basic capacity, possible capacity, practical capacity and PCU. 7 Marks

b) Calculate the basic capacity of traffic lane at a speed of 50 kmph. Assume that all the vehicles are of average length 5m. 7 Marks

UNIT-III

5 What are various traffic signs and explain with neat sketches. 14 Marks

(OR)

6 a) Write a brief note on cautionary, regulatory and informative signs with neat sketches. 7 Marks

b) Write a brief note on the following. 7 Marks

i) Parking inventory study.

ii) Multi storied car parking advantages and disadvantages.

UNIT-IV

7 The spot speeds at a location on an express way are known to be normally distributed with a mean of 80kmph. A new radar speedometer was brought by traffic department and a set of 100 observations of speeds was taken. The mean speed observed was 77.3kmph. And the standard deviation was 15kmph. Is there any evidence to prove that? 14 Marks

i) The new speedometer might have been faulty.

ii) The new speedometer is showing lesser speeds than actual.

(OR)

8 Develop a model for the following data: 14 Marks

Education Trips	10	12	17	16	18	20
School Population	20	24	28	32	36	39

UNIT-V

9 a) Can you explain, what is Intelligent transportation system (ITS)? 7 Marks

b) What are the distinct types of traffic management? Explain briefly. 7 Marks

(OR)

10 What are the various preparation techniques of EIA for a highway project before construction, during construction and after construction 14 Marks

CODE No.:14BT70106 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

ENVIRONMENTAL POLLUTION AND CONTROL

[Civil Engineering, Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the sources of SPM? List out the Air quality standards.	7 Marks
	b)	Write an account on effects and control methods of air pollutants.	7 Marks
		(OR)	
2	a)	What are the various causes of Air pollution?	7 Marks
	b)	Analyze the behavior of plumes under different lapse rate.	7 Marks

UNIT-II

3	a)	Discuss in detail about harmful effects of air pollutants on materials.	7 Marks
	b)	Describe Gravitational Settling Chambers with neat sketch.	7 Marks
		(OR)	
4	a)	Explain the term Acid Rains and its consequences.	7 Marks
	b)	Explain Fabric Filter with neat sketch.	7 Marks

UNIT-III

5	a)	Explain Origin of wastewater.	7 Marks
	b)	What are the principal sources of ground water pollution? Explain any two sources.	7 Marks
		(OR)	
6	a)	Explain the Cleanup of Marine oil pollution.	7 Marks
	b)	Explain Sewage Disposal in Ocean.	7 Marks

UNIT-IV

7		List out and explain the effects of soil pollutants which are considered as important.	14 Marks
		(OR)	
8	a)	What are the measures to be taken to prevent soil pollution?	7 Marks
	b)	What is Biological Magnification? Explain in detail.	7 Marks

UNIT-V

9	a)	Describe various types and sources of solid waste. What are the effects of solid waste?	7 Marks
	b)	Explain the best method to manage solid wastes of a village.	7 Marks
		(OR)	
10	a)	Write short notes on: i) Generation of solid waste. ii) Collection of solid waste.	7 Marks
	b)	Explain incineration. What are the advantages and disadvantages of incineration?	7 Marks

CODE No.:14BT70109 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

RURAL TECHNOLOGY

[Civil Engineering, Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Explain role of technology in improving rural infrastructure.	14 Marks
		(OR)	
2		Explain role of NABARD and CSIR in rural development.	14 Marks

UNIT-II

3	a)	Write a short note on: i) Solar cooker. ii) Solar heater by enlightening its working principle.	7 Marks
	b)	Write in detail about utilization of biomass.	7 Marks
		(OR)	
4	a)	What is meant by 3 rs? Explain the advantages of 3 R Principle.	7 Marks
	b)	Write in detail about any three types of alternative sources of energy.	7 Marks

UNIT-III

5		How does food and agro based technologies provide employment opportunities and economy?	14 Marks
		(OR)	
6		Explain the role of building and construction technologies in rural development.	14 Marks

UNIT-IV

7		Write a short notes on: i) Uses of Bio fertilizers. ii) Apiculture-Pici Culture Aqua culture.	14 Marks
		(OR)	
8	a)	Write a detailed note on rain water harvesting.	7 Marks
	b)	Write a short notes on the provision of the following in rural areas. i) Drinking water. ii) Environment generating technologies.	7 Marks

UNIT-V

9		Information technology- Role and impact in development in rural areas, analyze clearly.	14 Marks
		(OR)	
10		State the role of private sector in provision of employment and education in rural areas.	14 Marks

CODE No.:14BT70114 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

ENVIRONMENTAL IMPACT ASSESSMENT AND MANAGEMENT

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is EIA? Explain.	7 Marks
	b)	Discuss objectives, merits and demerits of EIA.	7 Marks
		(OR)	
2	a)	Describe possible changes in the environment by various project activities.	7 Marks
	b)	Describe the preparation of Environmental Base map.	7 Marks

UNIT-II

3	a)	How the Matrix method help the project planner?	7 Marks
	b)	What is interaction - Matrix methodology? Explain.	7 Marks
		(OR)	
4	a)	List out different EIA methods. Explain Ad-hoc methods in detail.	7 Marks
	b)	Discuss about environmental indices for water and air quality.	7 Marks

UNIT-III

5	a)	Define 'Land use map'. Explain its importance in the delineation of study area.	7 Marks
	b)	Discuss the methodology adopted for prediction and assessment of impacts on ground water.	7 Marks
		(OR)	
6	a)	Enumerate the direct land use impacts.	7 Marks
	b)	How the environmental problems in land conservation analyzed using systems analysis techniques?	7 Marks

UNIT-IV

7	a)	What are the causes and effects of Deforestation?	7 Marks
	b)	What is the necessity of delineation of study area of EIA?	7 Marks
		(OR)	
8	a)	Explain the sources of Air Pollution.	7 Marks
	b)	Explain the impact of developmental activities on vegetation.	7 Marks

UNIT-V

9	a)	Explain the objectives of Environmental Audit.	7 Marks
	b)	Explain briefly about Air Act and Wild Life Act.	7 Marks
		(OR)	
10		Explain one case study on EIA in Industries.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

POWER SEMICONDUCTOR DRIVES

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	State the advantages of electric drives over other drives.	7 Marks
	b)	List and explain various components of load torques.	7 Marks
		(OR)	
2	a)	Explain multi quadrant operation of electric drive.	7 Marks
	b)	Discuss closed loop speed control of electric drive with suitable block diagram.	7 Marks

UNIT-II

3		Explain single phase fully controlled converter control of **dc** separately excited motor under discontinuous conduction. Derive the expression for critical speed and draw the speed torque characteristics.	14 Marks
		(OR)	
4	a)	Explain rectifier control of **dc** series motor.	7 Marks
	b)	Speed of a **dc** series motor coupled to a fan load is controlled by variation of armature voltage. When armature voltage is 400V, motor takes 20A and the fan speed is 250 r.p.m. The combined resistance of armature and field is 1.0Ω. Calculate: i) Motor armature voltage for the fan speed of 350 r.p.m. ii) Motor speed for the armature voltage of 250V.	7 Marks

UNIT-III

5	a)	Explain the operation of four quadrant chopper fed **dc** separately motor.	7 Marks
	b)	Explain dynamic and regenerative braking of **dc** series motor fed from one quadrant chopper.	7 Marks
		(OR)	
6	a)	Explain the first quadrant chopper controlled separately excited **dc** motor.	7 Marks
	b)	Explain dynamic braking of separately excited **dc** motor using chopper.	7 Marks

UNIT-IV

7	a)	Explain closed loop speed control of three phase induction motor with static rotor resistance control.	9 Marks
	b)	Justify "Speed control of induction motor by stator voltage control is suitable for fan and pump drives".	5 Marks
		(OR)	
8	a)	Explain speed control of Induction motors using **ac** voltage controller.	6 Marks
	b)	Draw the circuit diagram and explain the working of a slip power recovery system using static scherbius system for a three phase induction motor.	8 Marks

UNIT-V

9	a)	Explain modes of variable frequency control of synchronous motor drive.	6 Marks
	b)	Explain the operation of various drive circuits for stepper motors with relevant circuit diagrams.	8 Marks
		(OR)	
10		Explain about the switched reluctance motor drives in detail.	14 Marks

CODE No.:14BT70202 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

POWER SYSTEM OPERATION AND CONTROL

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	For a plant consisting of N number of power plants, derive the incremental cost.	7 Marks
	b)	What do you understand by Economic Dispatch problem?	7 Marks
		(OR)	
2	a)	What are the assumptions considered while deriving the B-coefficients and derive?	7 Marks
	b)	Derive the Exact coordination equation (economic operation of power system considering losses).	7 Marks

UNIT-II

3		Obtain the Optimal Operation of a fundamental hydro thermal system with necessary equations.	14 Marks
		(OR)	
4	a)	Obtain the short-term scheduling of hydrothermal power system using penalty factor.	7 Marks
	b)	Derive and explain about Hydro Power Equation.	7 Marks

UNIT-III

5		Explain in detail about the various methods of unit commitment problem solution with necessary equations.	14 Marks
		(OR)	
6	a)	Compare the Economic Load Dispatch and Unit Commitment.	7 Marks
	b)	Explain the following: i) Constraints in Unit Commitment. ii) Start Up costs. iii) Shut Down costs.	7 Marks

UNIT-IV

7		Obtain the composite block diagram of single area load frequency control of a power system for a non-reheat turbine with necessary mathematical model.	14 Marks
		(OR)	
8		Classify the excitation systems and describe the block diagram of IEEE type-1 excitation system.	14 Marks

UNIT-V

9	a)	Define the terms: i) Control Area. ii) Coherent Group. iii) Area Control Error.	5 Marks
	b)	Deduce with necessary equations, dynamic response of LFC of an isolated power system with integral controller.	9 Marks
		(OR)	
10	a)	Explain about LFC of isolated power system; derive the steady state frequency error.	8 Marks
	b)	Define the terms: Tie Line, Coherent group, Control Area.	6 Marks

CODE No.:14BT70203 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

POWER SYSTEM ANALYSIS

[Electrical and Electronics Engineering]

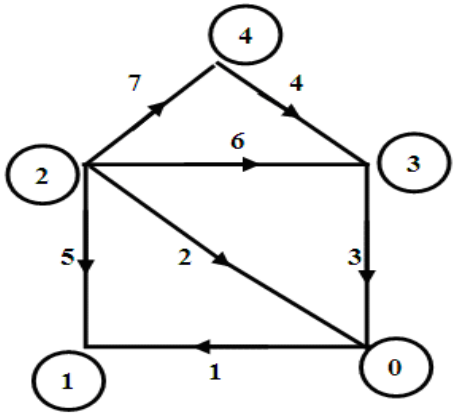
Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 For the network shown in figure, obtain the incident matrices A, B, C and K taking node '0' as reference. Hence verify the identities. 14 Marks

i) $B_l = A_l C^T$ ii) $B^T C = 0$. Take elements 5, 6 and 7 as links.



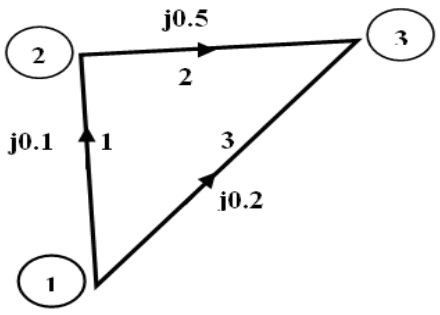
(OR)

2 a) Deduce the equation to form Y_{bus} using singular transformation method. 8 Marks

b) State and explain primitive network. 6 Marks

UNIT-II

3 a) For the network shown in Fig.Q3a, determine Zbus using Zbus building algorithm with node ' 1' as reference. Self impedances of the elements are in p.u. and marked on the diagram. Add elements in the ascending order of their numbering. 10 Marks



b) Modify the Z_{BUS} matrix thus obtained in above problem, when the element 1-2 self impedance is to be changed to j0.4. 4 Marks

(OR)

4 a) With the help of expressions, explain the procedure of representing tap changing transformers. 7 Marks

b) Write down the expressions and explain the terms in Park's and Clarke's transformations. 7 Marks

UNIT-III

5	a)	What are the initial conditions assumed for the power flow studies by GS method? What is acceleration factor? What is its role in GS method for power flow studies?	7 Marks
	b)	Draw and explain the flow chart for Gauss Seidel load flow method.	7 Marks
		(OR)	
6	a)	Deduce static load flow equations in rectangular form.	7 Marks
	b)	Develop the equations to form Y_{bus} using direct inspection method.	7 Marks

UNIT-IV

7	a)	Develop the equations of elements of Jacobin matrix in polar coordinates.	7 Marks
	b)	Explain the differences between Gauss Seidel and Newton Rapson method.	7 Marks
		(OR)	
8	a)	Develop static load flow equations in rectangular form.	7 Marks
	b)	Compare different methods of load flow studies.	7 Marks

UNIT-V

9	a)	Derive the expression for Swing equation of a SMIB system. What is the significance of swing curve?	7 Marks
	b)	With the help of Equal area criterion for one machine connected to Infinite bus, derive the expressions for critical clearing angle and critical clearing time.	7 Marks
		(OR)	
10	a)	Explain point-by-point method to solve swing equation.	7 Marks
	b)	An AC generator is delivering 50% of maximum power to infinite bus, due to sudden short circuit the reactance between generator and infinite bus is increased to 500% of the value before the fault. The maximum that can be delivering after clearance of fault is 75% of the original value. Calculate the critical clearing angle to maintain stability.	7 Marks

CODE No.:14BT70204 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

REACTIVE POWER COMPENSATION AND MANAGEMENT

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Explain how a Load Compensator works as a voltage regulator.	14 Marks
		(OR)	
2		How power factor correction and voltage regulation can be achieved by means of compensation in 1-phase systems?	14 Marks

UNIT-II

3	a)	Write the objectives and practical limitations of series compensation.	7 Marks
	b)	Discuss about passive shunt and dynamic compensation techniques.	7 Marks
		(OR)	
4	a)	Analyze the main objectives of series compensation.	7 Marks
	b)	Explain uniformly distributed fixed compensation in transmission lines.	7 Marks

UNIT-III

5	a)	Discuss about effects of under Voltages and Frequency.	7 Marks
	b)	Explain the objective and mathematical modeling of reactive power coordination.	7 Marks
		(OR)	
6		Explain in detail the concepts of: i) Effects of harmonics and how to compensate it. ii) Effect of electromagnetic interferences.	14 Marks

UNIT-IV

7	a)	Define Reactive Power Management.	7 Marks
	b)	Explain how Reactive Power Management or Planning is obtained by means of mathematical modeling.	7 Marks
		(OR)	
8	a)	Describe the advantages and disadvantages of Flicker compensation techniques.	7 Marks
	b)	Explain the load patterns in demand side management.	7 Marks

UNIT-V

9		Explain how a user side reactive power management is obtained by means of capacitors.	14 Marks
		(OR)	
10	a)	Draw typical layouts of AC traction systems and explain its operation.	7 Marks
	b)	Explain how the harmonics are produced in an electric arc furnace.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

FINITE ELEMENT METHODS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

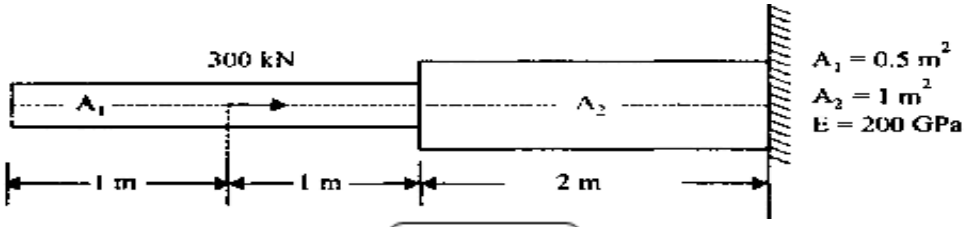
Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 List out the basic steps involved in finite element analysis and explain them briefly. 14 Marks

(OR)

2 Determine the nodal displacements and element stresses by finite element formulation for the following figure. Use P=300kN; A_1=0.5m^2; A_2=1m^2; E=200 GPa. 14 Marks



UNIT-II

3 A simply supported beam of span 2m is subjected to a point load of 100kN at the centre and a bending moment of 20kN-m also at the centre. Calculate the maximum deflection and slope if the flexural rigidity is 800 x 10^{3}N-m^2. 14 Marks

(OR)

4 A cantilever beam is loaded with point load at end and uniform distributed load throughout the beam of length L m. Explain how will you proceed with the solution using FEM. 14 Marks

UNIT-III

5 a) Justify the title 'constant strain triangle' of a linear triangular element. 4 Marks
b) What is a Jacobian matrix in CST element formulation? 4 Marks
c) Identify the difference in FE modeling of plane stress and plane strain problems. 6 Marks

(OR)

6 With suitable examples, explain the meaning and formulations of properties of axisymmetric elements. State their applications. 14 Marks

UNIT-IV

7 A metallic fin, with thermal conductivity of 360W/m K, 0.1cm thick and 10cm long extends from a plane wall whose temperature is 235^{0}C. Determine the temperature distribution and amount of heat transfer from the fine the air at 20^{0}C with a heat transfer coefficient of 9 W/m^2 K. Take width of the fin is 1m. 14 Marks

(OR)

8 a) Discuss in detail about the concept of iso parametric element. 7 Marks
b) Differentiate sub parametric and super parametric elements. 7 Marks

UNIT-V

9 Derive the element consistent mass matrix for a CST element. 14 Marks

(OR)

10 Derive the elemental mass matrix for 1-D bar element and 1-D plane truss element. 14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

MANUFACTURING SYSTEM DESIGN

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Explain about overview of the classification scheme for manufacturing systems.	14 Marks
		(OR)	
2	a)	Explain the role of manual labor in production systems.	7 Marks
	b)	Discuss about advanced automation functions.	7 Marks

UNIT-II

3		Discuss about performance measures in a automated manufacturing system.	14 Marks
		(OR)	
4		Discuss the following terms in context of performance modeling tools i) Simulation model. ii) Analytical model.	14 Marks

UNIT-III

5		Discuss about assembly workstations, work transport systems and line pacing in manual assembly line systems.	14 Marks
		(OR)	
6		Discuss about the following material handling systems. i) Industrial trucks. ii) Automated guided vehicle.	14 Marks

UNIT-IV

7	a)	Explain how machine cell design is critical in cellular manufacturing.	7 Marks
	b)	Explain about composite part concept in cellular manufacturing.	7 Marks
		(OR)	
8	a)	Discuss about FMS planning, design and operational issues.	7 Marks
	b)	What is FMS and what makes it flexible?	7 Marks

UNIT-V

9	a)	Summarize simulation process for manufacturing systems analysis.	7 Marks
	b)	What are the benefits of simulation?	7 Marks
		(OR)	
10	a)	Differentiate between Static and Deterministic simulation models.	7 Marks
	b)	Explain about Simulation software packages.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

METROLOGY AND MEASUREMENTS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define the following terms with an example: i) Allowance. ii) Clearance. iii) Interference.	9 Marks
	b)	List out various advantages and limitations of limit gauges.	5 Marks
		(OR)	
2	a)	What is a comparator? Classify the different types of Comparators.	7 Marks
	b)	Explain how a pneumatic comparator works.	7 Marks

UNIT-II

3	a)	Write a brief note on Calibration of slip gauges and Dial indicators.	7 Marks
	b)	Distinguish between line, end and wave length standards.	7 Marks
		(OR)	
4	a)	Explain the principle of working of a sine bar for angular measurement with the help of a diagram. List the advantages and limitations of sine bar.	9 Marks
	b)	With the help of sketches, explain the working of an external micrometer.	5 Marks

UNIT-III

5	a)	List out various BIS symbols for indication of surface finish.	7 Marks
	b)	What are the elements of screw thread? Also explain errors in screw threads.	7 Marks
		(OR)	
6	a)	What is meant by alignment tests on machine tools and why they are necessary?	6 Marks
	b)	Name and describe various alignment tests performed on a drilling machine with neat sketches.	8 Marks

UNIT-IV

7		Mention various types of transducers to measure displacement. Explain in detail with suitable sketches where ever necessary.	14 Marks
		(OR)	
8	a)	With a neat sketch of LVDT, explain the measurement of displacement.	7 Marks
	b)	What are the different arrangements of strain gauge rosettes? Explain them.	7 Marks

UNIT-V

9	a)	Explain the working of a Mcleod Pressure Gauge with the help of a neat sketch.	7 Marks
	b)	Write the working of Proving ring with the help of a neat sketch.	7 Marks
		(OR)	
10	a)	Explain the Laws of Thermo Couples and also their practical significance.	5 Marks
	b)	Explain the construction and working of Prony break Dynamometer.	9 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

INDUSTRIAL AUTOMATION AND ROBOTICS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Explain automated flow line with and without storage buffer	14 Marks
		(OR)	
2	a)	Define automation and its types.	7 Marks
	b)	Explain various line balancing methods with their advantages and applications.	7 Marks

UNIT-II

3	a)	Describe the functions of the four basic components of a robot.	8 Marks
	b)	Explain the classification of robots based on control method.	6 Marks
		(OR)	
4		Define and explain:	14 Marks
		i) Work volume. ii) Degree of freedom.	
		iii) Stability. iv) Spatial resolution.	

UNIT-III

5		Explain forward kinematics associated with 3-DOF.	14 Marks
		(OR)	
6		Briefly explain about Lagrangian formulation for a planar 2R manipulation	14 Marks

UNIT-IV

7		With suitable applications, explain the following in brief:	14 Marks
		i) Slip sensors.	
		ii) Forced oscillation Slip sensors.	
		iii) Proximity sensors.	
		(OR)	
8	a)	Discuss about the robot end-effector compliance mechanism.	8 Marks
	b)	Discuss in detail the working of fail safe hazard sensor system used in industrial robots.	6 Marks

UNIT-V

9	a)	Discuss about lead through programming methods.	6 Marks
	b)	What are the benefits and risks of artificial intelligence?	8 Marks
		(OR)	
10	a)	Explain the concept of robot intelligence and advancements.	7 Marks
	b)	Briefly discuss various software packages available in robot programming.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

REFRIGERATION AND AIR CONDITIONING

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Compare air refrigeration systems with vapor compression systems.	6 Marks
	b)	A Bell Coleman refrigeration cycle works between 1 bar and 5 bar. The adiabatic efficiency of compressor is 85% and expander is 90%. Find out COP of the system and its tonnage when air flow rate is 2kg/s. The ambient temperature is 27^0C and the air coming out of refrigerator is 0^0C.	8 Marks
		(OR)	
2	a)	Sketch and explain the working of Boot strap cooling system used in Aircrafts.	10 Marks
	b)	Discuss the concepts of Heat engines, Refrigerators and Heat pumps.	4 Marks

UNIT-II

3	a)	Justify the use of throttling device for expansion instead of an expander in a Vapor compression refrigeration system.	6 Marks
	b)	Explain the terms ODP and GWP. Name few environmental friendly refrigerants having low ODP.	8 Marks
		(OR)	
4	a)	List out the advantages of vapor compression refrigeration system over air refrigeration system.	7 Marks
	b)	Explain the effect of suction and delivery pressure on COP of vapor compression cycle.	7 Marks

UNIT-III

5	a)	Compare vapor compression and vapor absorption refrigeration systems.	8 Marks
	b)	Discuss the advantages and limitations of Thermo Electric refrigeration systems.	6 Marks
		(OR)	
6	a)	Explain the working of an Electrolux refrigerator with a neat sketch.	7 Marks
	b)	Explain the working principle of steam Jet refrigeration system.	7 Marks

UNIT-IV

7	a)	$400m^3$/min of re circulated air at 20^0C DBT and 10^0C DPT is to be mixed with $150m^3$/min of fresh air at 35^0C DBT and 45% RH. Determine the enthalpy, specific volume, humidity ratio and dew point temperature of the mixture.	10 Marks
	b)	Explain the factors RSHF and GSHF.	4 Marks
		(OR)	
8	a)	Sketch and explain year round air conditioning system.	6 Marks
	b)	Discuss about the different components of cooling loads in A/C systems.	8 Marks

UNIT-V

9	a)	Define the human comfort and explain the factors which affect human comfort.	7 Marks
	b)	Discuss the various types of duct systems and their applications.	7 Marks
		(OR)	
10	a)	How do you define effective temperature as an index of Comfort? On what factors does it depend?	7 Marks
	b)	Compare single duct system and dual duct systems.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

SUPPLY CHAIN MANAGEMENT

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	State the significance and objectives of supply chain management.	7 Marks
	b)	'The goals of supply chain aim to increase profitability, flexibility and customer satisfaction' - Comment.	7 Marks
		(OR)	
2	a)	What are the objectives of supply chain management? Discuss the future potential of supply chain management.	7 Marks
	b)	With neat sketch, describe major drivers of supply chain.	7 Marks

UNIT-II

3	a)	Discuss the common inventory management mistakes made by supply chain managers.	7 Marks
	b)	Explain the concept of Distribution resource planning.	7 Marks
		(OR)	
4	a)	State and explain various types of costs associated with inventory.	7 Marks
	b)	Considering yourself as a Fast Food Distributor, analyze the distribution system in Supply Chain by suitable case of your choice.	7 Marks

UNIT-III

5	a)	What is Bullwhip effect? Explain its causes and obstacles to coordination in a supply chain.	7 Marks
	b)	Consider the supply chain involved when a customer orders a book from Amazon. Identify the push/pull boundary and two processes each in the push and pull phases.	7 Marks
		(OR)	
6	a)	Analyze what are various supply chain problems that can be solved using information technology.	6 Marks
	b)	Outline the impact of customer needs on implied demand uncertainty.	8 Marks

UNIT-IV

7	a)	Discuss the six basic modes of transportation that a company can choose from.	4 Marks
	b)	Identify the role of transportation in creating a strategic fit between the company's supply chain and competitive strategies.	10 Marks
		(OR)	
8	a)	Elucidate various phases in the transportation network design.	7 Marks
	b)	Illustrate tailored transportation.	7 Marks

UNIT-V

9	a)	Discuss the advantages, disadvantages and problems of outsourcing.	7 Marks
	b)	Discuss the role of SCOR modeling in SCM performance measurement.	7 Marks
		(OR)	

10 a) Discuss the global issues in SCM with suitable examples. 7 Marks

b) Describe the emerging trends in SCM. 7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

POWER PLANT ENGINEERING

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write a short note on Ash Handling systems.	7 Marks
	b)	What are the different methods of firing of coal?	7 Marks
		(OR)	
2	a)	Explain the working of Spreader strokers and Multi retort strokers with a neat sketch.	7 Marks
	b)	Write a short notes on coal handling systems.	7 Marks

UNIT-II

3	a)	Give a detailed comparison between diesel power plants and steam power plants.	8 Marks
	b)	Draw the layout of a high capacity diesel power plant and explain its components.	6 Marks
		(OR)	
4	a)	Explain the necessity of super charging of diesel engines and list its advantages.	8 Marks
	b)	Discuss about cooling and lubrication systems used in diesel power plants.	6 Marks

UNIT-III

5	a)	Sketch and explain the components of a nuclear reactor.	6 Marks
	b)	What is a hydrograph? How is it used for determining storage capacity?	8 Marks
		(OR)	
6	a)	Explain different types of surge tanks used in hydro power plants.	6 Marks
	b)	Explain the working of a gas cooled reactor and list its merits and demerits.	8 Marks

UNIT-IV

7	a)	What are the different forms of geothermal energy? Explain.	6 Marks
	b)	Explain principle of power generation from horizontal and vertical axis wind mills.	8 Marks
		(OR)	
8	a)	Explain the principle of working of MHD system. What are the problems encountered in its design.	6 Marks
	b)	What is a fuel cell? Explain the working of a fuel cell with a sketch.	8 Marks

UNIT-V

9	a)	What are the different components of costs involved in the total cost of electrical energy generated by a thermal power plant?	6 Marks
	b)	A 30 MW plant has an overall efficiency of 25%. The CV of fuel used is 25000KJ/Kg. Estimate the cost of coal per 24 hrs if the load factor of the plant is 0.4. One tone of coal costs Rs 650.	8 Marks
		(OR)	
10	a)	What are the methods to control SO_2 and NO_X from thermal power plants?	6 Marks

b) How the load duration curve is prepared from a given load curve? 8 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

ADVANCED WELDING TECHNOLOGY

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Briefly discuss the classification of welding process. Differentiate between arc welding and flame welding processes.	CO1	7 Marks
	b)	Discuss about thermal cutting process.	CO1	7 Marks
		(OR)		
2	a)	What is the principle behind spot welding? Describe spot welding process with a neat sketch.	CO1	7 Marks
	b)	Explain the theory and mechanism of solid state welding with the help of suitable diagrams.	CO1	7 Marks

UNIT-II

3	a)	Describe the metallurgical effects in resistance welding cycle.	CO1	10 Marks
	b)	Discuss about Time-Temperature-Transformation (TTT) diagrams.	CO2	4 Marks
		(OR)		
4	a)	Discuss about properties of heat affected zones in welding.	CO2	7 Marks
	b)	What are the causes and effect of stresses in welds?	CO2	7 Marks

UNIT-III

5	a)	What are the different methods of preheating? Explain.	CO3	7 Marks
	b)	Explain the necessity of pre and post weld treatment of the welds.	CO3	7 Marks
		(OR)		
6		Explain the tolerance for metallurgical and operational defects.	CO3	14 Marks

UNIT-IV

7		List the various types of defects in weldments, causes and remedies of these defects with neat sketch.	CO3	14 Marks
		(OR)		
8	a)	Briefly explain the halide test with neat sketch.	CO3	7 Marks
	b)	State the causes and remedies of any four defects.	CO3	7 Marks

UNIT-V

9	a)	Explain welding procedure specification in detail.	CO2	7 Marks
	b)	Write a short note on weldex.	CO2	7 Marks
		(OR)		
10	a)	Discuss about Welding Information Network (WIN).	CO4	7 Marks
	b)	What are the various performance qualification tests in the welding? Briefly discuss any one type of performance qualification tests.	CO4	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

ELECTRONIC MEASUREMENTS AND INSTRUMENTATION

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the following terms in detail. i) Speed of response. ii) Fidelity. iii) Lag. iv) Dynamic error.	8 Marks
	b)	Explain the construction and working of thermo couple measuring instruments.	6 Marks
		(OR)	
2	a)	Design an Aryton shunt to provide an ammeter with current ranges 0-1mA, 10mA, 50mA and 100mA, using a D'Arsonval movement having an internal resistance of 100Ω and full scale deflections of 50μA.	6 Marks
	b)	Explain the operation of AC voltmeters using rectifiers.	8 Marks

UNIT-II

3	a)	Draw the circuit diagram of Digital Fourier Analyzers and explain its operation.	7 Marks
	b)	Describe A.F sine and square wave generator with suitable diagram and working.	7 Marks
		(OR)	
4	a)	Explain the random noise generator with the help of a block diagram.	6 Marks
	b)	Explain the operation of sine and square wave generator.	8 Marks

UNIT-III

5	a)	Explain the digital storage oscilloscope with the help of a block diagram.	7 Marks
	b)	Discuss in detail about the probes of CRO.	7 Marks
		(OR)	
6	a)	Explain about the Dual Trace Oscilloscope with neat block diagram.	7 Marks
	b)	Explain about the storage Oscilloscope.	7 Marks

UNIT-IV

7	a)	Explain how the Maxwell's bridge is used to measure the unknown Inductance with the help of a diagram.	7 Marks
	b)	Explain how the quality factor is measured using Q-meter.	7 Marks
		(OR)	
8	a)	Compare the constructional features of AC bridge with DC bridge.	7 Marks
	b)	List out the precautions while using the electrical bridges.	7 Marks

UNIT-V

9	a)	Describe the selection criteria for the transducer.	7 Marks
	b)	Explain the construction and working principle of thermocouple.	7 Marks
		(OR)	
10	a)	With a neat figure, demonstrate the concept of Data Acquisition system.	7 Marks
	b)	Write a short note on Single Channel DAS with an example.	7 Marks

CODE No.:14BT70402 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

EMBEDDED SYSTEMS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is a design metric and discuss different design metrics.	6 Marks
	b)	What is a single purpose processor? What are the benefits of choosing a single purpose processor over a general purpose processor?	8 Marks
		(OR)	
2	a)	Explain briefly three main design technologies of Embedded Systems.	6 Marks
	b)	Describe the different ways of optimizing the design of single purpose processor.	8 Marks

UNIT-II

3	a)	Explain the three computational models used to describe Embedded Systems.	6 Marks
	b)	Illustrate the features and considerations of a processor in terms of Programmers View.	8 Marks
		(OR)	
4	a)	How FSMD differs from FSM?	6 Marks
	b)	Differentiate between concurrent processes and sequential program model. Describe the concurrent processor model for a Heartbeat Monitoring system.	8 Marks

UNIT-III

5	a)	Explain about Ethernet with its protocol architecture.	7 Marks
	b)	Explain about CAN Bus.	7 Marks
		(OR)	
6	a)	Explain the UART communication format with neat sketch.	6 Marks
	b)	Discuss the synchronous data transfer scheme using any two protocols.	8 Marks

UNIT-IV

7	a)	Describe different objects of an operating system kernel.	6 Marks
	b)	What is a Semaphore? Explain with example, how you achieve task synchronization using semaphores.	8 Marks
		(OR)	
8	a)	How the communication establish between tasks using mailbox?	6 Marks
	b)	Differentiate the clock driven and event driven scheduling in RTOS.	8 Marks

UNIT-V

9	a)	Explain the process of building application software with native tools.	7 Marks
	b)	Provide THUMB instruction set with examples.	7 Marks
		(OR)	
10	a)	Explain the process of exception handling in ARM.	6 Marks
	b)	Discuss the ways to get the file into the targeting system.	8 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

LIGHT WAVE COMMUNICATIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	List out why we need optical fiber cables.	7 Marks
	b)	Explain various types of fiber optic cables used in industry.	7 Marks
		(OR)	
2	a)	With the help of cross sectional view of fibers, neatly explain about single and multimode fibers.	8 Marks
	b)	Define the following terms. i) Critical angle. ii) Total internal reflection. iii) Refractive index and NA.	6 Marks

UNIT-II

3	a)	What are linearly polarized modes? Explain in detail.	6 Marks
	b)	What do you understand by waveguide and material dispersion? Explain in brief.	8 Marks
		(OR)	
4	a)	Explain about stimulated brillouin scattering.	7 Marks
	b)	Explain about various types of bending losses.	7 Marks

UNIT-III

5	a)	Discuss the principle working of Distributed feedback laser.	7 Marks
	b)	What is the resonant frequency of laser? Derive the expression of wavelength spacing between two modes.	7 Marks
		(OR)	
6	a)	With the aid of suitable diagrams, discuss the principles of operation of the LASER diode principle, modes and threshold conditions.	7 Marks
	b)	Compare and contrast the structure and performance characteristics of semiconductor and III-V semiconductor alloy APDs for operation in wavelength range 1.1 to 1.6μm.	7 Marks

UNIT-IV

7	a)	Briefly describe adhesive splicing and no-adhesive quick splicing techniques.	7 Marks
	b)	Using a coherent detection, how optic frequency modulation is possible? Explain.	7 Marks
		(OR)	
8	a)	Discuss different types of line codes in optical fiber communication system	6 Marks
	b)	Explain the structure of single mode and multi mode step index and graded index fibers.	8 Marks

UNIT-V

9		Briefly describe the population inversion. With the aid of suitable diagrams, discuss the principles of operation of the laser.	14 Marks
		(OR)	
10		Explain the layered architecture of SONET/SDH with neat diagram.	14 Marks

CODE No.:14BT70405 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

DIGITAL CMOS IC DESIGN

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain in detail about NORA CMOS logic.	7 Marks
	b)	Derive the expression for τ_{pLH} of the CMOS inverter, where τ_{pLH} is the time taken by the CMOS inverter to go from low to high level.	7 Marks
		(OR)	
2	a)	Sketch the 3-input XOR function using static CMOS logic.	7 Marks
	b)	Explain the various regions of CMOS inverter transfer characteristics.	7 Marks

UNIT-II

3	a)	Illustrate the various design approaches of low CMOS design.	7 Marks
	b)	Analyze the dynamic power consumption with an example.	7 Marks
		(OR)	
4	a)	Illustrate the various design approaches of low power CMOS design.	7 Marks
	b)	Discuss the comparison between SRAM and DRAM.	7 Marks

UNIT-III

5	a)	What are the design methods to implement a CMOS circuit?	7 Marks
	b)	Discuss the advantages and disadvantages of VLSI design.	7 Marks
		(OR)	
6	a)	What do you understand from System On a Chip?	7 Marks
	b)	Explain in detail about custom design flow.	7 Marks

UNIT-IV

7	a)	Draw the layout diagram of CMOS NOR gate.	7 Marks
	b)	Distinguish between area and wire capacitances.	7 Marks
		(OR)	
8	a)	Derive the expressions for rise time and fall time in the case of CMOS inverter.	7 Marks
	b)	Express the area capacitance in terms of standard capacitance units.	7 Marks

UNIT-V

9	a)	Draw and explain 4 x 4 Barrel shifter with pass transistors.	7 Marks
	b)	Explain Wallace tree multiplier with an example.	7 Marks
		(OR)	
10	a)	With the help of schematic, explain 4-bit serial-parallel multiplier.	7 Marks
	b)	Explain Manchester carry chain adder and write its merits and demerits.	7 Marks

CODE No.:14BT70501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

COMPILER DESIGN

[Computer Science and Engineering, Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the Phases of Compiler.	7 Marks
	b)	Explain role of lexical analyzer in detail.	7 Marks
		(OR)	
2	a)	Write short notes on the following. i) Symbol Table. ii) Error Handler.	7 Marks
	b)	Explain in detail about Specification of Tokens	7 Marks

UNIT-II

3	a)	Outline the difference between Syntax tree and Parse tree.	6 Marks
	b)	Compare and contrast the LL(1) parser and Recursive Descent Parser.	8 Marks
		(OR)	
4	a)	Bring out the difference between leftmost derivation and right most derivation.	7 Marks
	b)	Consider the grammar and Construct an SLR parsing table for the grammar. S→ACB/CbB/Ba, A→da/BC, B→g/ε, C→h/ε.	7 Marks

UNIT-III

5	a)	Explain any two syntax directed translation. Explain applications of SDT's.	7 Marks
	b)	Convert S→if (C) S_1 else S_2 to an SDT.	7 Marks
		(OR)	
6	a)	Explain the rules for type checking with an example.	7 Marks
	b)	Explain overloading of functions and operators.	7 Marks

UNIT-IV

7	a)	What are the different kinds of intermediate representations? Explain.	7 Marks
	b)	Write the syntax directed translation for Boolean expressions in control flow representation.	7 Marks
		(OR)	
8	a)	Describe different storage allocation strategies. Explain how to access non local names in any programming environment.	7 Marks
	b)	Discuss the simple stack allocation scheme in detail.	7 Marks

UNIT-V

9	a)	What are the advantages of DAG representation? Give example.	7 Marks
	b)	What is next use information? Write an algorithm to determine the liveness and next use information for each statement in a basic block.	7 Marks
		(OR)	
10	a)	Construct an algorithm for DAG and point out the applications of DAG.	7 Marks
	b)	Explain the principles of source optimization in detail.	7 Marks

CODE No.:14BT70502 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

MOBILE COMPUTING

[Computer Science and Engineering, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	List any four limitations of Mobile Computing.	4 Marks
	b)	Draw the GSM architecture and explain the subsystems involved.	10 Marks
		(OR)	
2	a)	Illustrate the usage of SGSN and GGSN in GPRS architecture.	8 Marks
	b)	Explain the different security services provided by GSM.	6 Marks

UNIT-II

3	a)	With an example, explain the direct sequence spread spectrum method.	7 Marks
	b)	Discuss in detail about autocorrelation codes used in CDMA system.	7 Marks
		(OR)	
4	a)	Briefly explain about channels of IS-95 cdmaone system.	7 Marks
	b)	With a neat sketch, describe in detail about the protocol layers of WCDMA.	7 Marks

UNIT-III

5	a)	With a neat diagram, explain the architecture of a mobile IP network.	7 Marks
	b)	Write short notes on registration of mobile node in mobile IP network.	7 Marks
		(OR)	
6	a)	Illustrate the mobility binding mechanism in mobile IP networks.	7 Marks
	b)	Explain snooping TCP. Give its advantages and disadvantages.	7 Marks

UNIT-IV

7	a)	Explain Query-processing architecture for processing a query using distributed database.	7 Marks
	b)	Explain the advantages of using an adaptation mechanism.	7 Marks
		(OR)	
8	a)	Justify the need for data recovery. Describe the steps involved in data recovery process.	6 Marks
	b)	Compare flat-disk, skewed-disk and multi-disc broadcast models. List the situations in which one is preferred over another.	8 Marks

UNIT-V

9	a)	List and explain the types of data synchronization techniques.	7 Marks
	b)	Describe in detail about activesync software.	7 Marks
		(OR)	
10	a)	With a neat diagram, explain the application server.	7 Marks
	b)	Mention the features of file system for mobile computing devices.	7 Marks

CODE No.:14BT70531 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

ADVANCED DATA STRUCTURES

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Illustrate the operations of a Circular linked list with an example.	10 Marks
	b)	What are the advantages of Circular linked lists over Singly linked lists?	4 Marks
		(OR)	
2	a)	What is the need for linked representation of lists? Describe Multiply linked lists with an example.	10 Marks
	b)	What are the advantages and disadvantages of a Doubly linked list?	4 Marks

UNIT-II

3		Explain about Circular Queue. Write algorithm for implementation of queue using linked list.	14 Marks
		(OR)	
4	a)	Discuss the below functionalities of Stack in detail. i) peek(). ii) isFull(). iii) isEmpty().	9 Marks
	b)	Discuss the operations of linked stacks and linked Queues.	5 Marks

UNIT-III

5	a)	What is a height balanced tree? Explain how to balance height of a tree by considering an AVL tree.	7 Marks
	b)	Illustrate how to delete a node from a binary search tree. Also, write a procedure for removing a node from a binary search tree.	7 Marks
		(OR)	
6	a)	Write and explain breadth first traversal algorithm with an example.	7 Marks
	b)	Construct a binary Heap with the following values: 23, 7, 92, 6, 12, 14, 40, 44, 20, 21.	7 Marks

UNIT-IV

7	a)	Illustrate different graph representation methods with suitable examples.	7 Marks
	b)	Write a routine to traverse a graph using DFS technique.	7 Marks
		(OR)	
8	a)	Define M-way search tree and explain searching an M-way search tree with an example.	7 Marks
	b)	Describe the merits and demerits of M-way search trees.	7 Marks

UNIT-V

9	a)	Discuss in detail about different open addressing methods.	7 Marks
	b)	Write a C program for implementing any one of the open addressing methods.	7 Marks
		(OR)	
10		Explain in detail about the linear open addressing and chaining techniques	14 Marks

CODE No.:14BT71001 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

ANALYTICAL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe the working principle of sodium analyzer with a neat sketch.	7 Marks
	b)	Explain the high frequency method of conductivity measurement.	7 Marks
		(OR)	
2	a)	Discuss the working principle of direct reading pH meter.	7 Marks
	b)	Explain the working principle of dissolved oxygen analyzer with a neat sketch.	7 Marks

UNIT-II

3		Mention the list of pollution monitoring devices and elaborate any two in detail.	14 Marks
		(OR)	
4	a)	Discuss a method for Carbon monoxide analysis.	7 Marks
	b)	Explain working of the H_2S analyzer system with neat sketch.	7 Marks

UNIT-III

5		Explain the operation of gas chromatography with neat sketch.	14 Marks
		(OR)	
6	a)	Explain the operation of electron capture detector used in gas chromatography.	7 Marks
	b)	Explain the operation of mass detector used in liquid chromatography.	7 Marks

UNIT-IV

7	a)	Explain the operation of double beam ratio recording spectrometer.	7 Marks
	b)	Explain about various radiation sources used in spectrometers.	7 Marks
		(OR)	
8	a)	Describe the operation of FTIR spectrophotometer.	7 Marks
	b)	Explain the operation of atomic emission spectrometer.	7 Marks

UNIT-V

9	a)	Write short notes on the Scintillation counter and Proportional counter.	7 Marks
	b)	Explain the construction and working principle of NMR spectrometer.	7 Marks
		(OR)	
10	a)	Explain in detail about Time of Flight Mass spectrometer.	7 Marks
	b)	Discuss the working principle of GM counter and give its applications.	7 Marks

CODE No.:14BT71003 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

LOGIC AND DISTRIBUTED CONTROL SYSTEMS

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	With a neat block diagram, explain various components of PLC.	7 Marks
	b)	Explain the architecture of PLC with neat diagram.	7 Marks
		(OR)	
2		List various programming languages of PLC. Explain the advantages of ladder diagram over relay circuit with an example.	14 Marks

UNIT-II

3	a)	Briefly explain about input units of PLC.	7 Marks
	b)	Summarize about signal conditioning in PLC.	7 Marks
		(OR)	
4		Distinguish the terms sinking input and Sourcing output with block diagrams and explain how these are interfacing with the connected equipment.	14 Marks

UNIT-III

5	a)	Describe the conventions required for Ladder Programming with neat sketch.	7 Marks
	b)	With logic ladder program and a timing chart, explain Retentive On-Delay Timer.	7 Marks
		(OR)	
6		Illustrate the basic math functions used in PLC with example.	14 Marks

UNIT-IV

7	a)	Explain the architecture of generalized distributed control system.	8 Marks
	b)	Describe different topologies used in DCS communication.	6 Marks
		(OR)	
8	a)	Describe the tasks performed by supervisory computer control systems and control algorithm.	9 Marks
	b)	Explain about the DCS integration with PLC and computers.	5 Marks

UNIT-V

9	a)	List various benefits offered by Foundation field bus.	7 Marks
	b)	Discuss briefly about the physical layer and data link layer of HART protocol.	7 Marks
		(OR)	
10	a)	Discuss briefly about Communication Profile of PROFIBUS-DP.	7 Marks
	b)	Explain about IEEE 1451 protocol.	7 Marks

CODE No.:14BT71201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

MOBILE APPLICATION DEVELOPMENT

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain about mobile web presence and its applications.	7 Marks
	b)	Discuss the mobile information design.	7 Marks
		(OR)	
2	a)	Describe about effective use of screen real estate.	7 Marks
	b)	Discuss about mobile applications and its marketing issues.	7 Marks

UNIT-II

3	a)	Write a procedure for linking activities using Intents.	8 Marks
	b)	Write short notes about ScrollView and FrameLayout.	6 Marks
		(OR)	
4	a)	Write a process for calling Built-In Applications using Intents.	7 Marks
	b)	Discuss the concept of Anchoring Views.	7 Marks

UNIT-III

5	a)	Write program to perform regular operations on a table.	7 Marks
	b)	Define View. Explain various types of Views.	7 Marks
		(OR)	
6	a)	Discuss about picker views with examples.	7 Marks
	b)	Describe the steps for retrieving and modifying the preferences.	7 Marks

UNIT-IV

7	a)	Discuss the process of Receiving SMS Messages using BroadcastReceiver.	7 Marks
	b)	How do you monitor a location and write the code snippet to monitor it?	7 Marks
		(OR)	
8	a)	Explain the steps involved in displaying maps.	9 Marks
	b)	What are different ways to get location data?	5 Marks

UNIT-V

9	a)	Write a procedure for demonstrating starting and stopping of a service.	7 Marks
	b)	Explain the role of Application Bar in Window Phone 7.	7 Marks
		(OR)	
10	a)	Discuss the concept of Threading in handling Long Running Tasks with example.	8 Marks
	b)	Describe the anatomy of an iOS App.	6 Marks

CODE No.:14BT71202 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

MULTIMEDIA AND APPLICATION DEVELOPMENT

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain in detail about color models in Images.	7 Marks
	b)	Explain the overview of multimedia software tools.	7 Marks
		(OR)	
2		Explain Nyquist theorem. Calculate the number of bits per second required for 4kHz speech signal sampled at the Nyquist rate.	14 Marks

UNIT-II

3	a)	Discuss Polymorphism and Dynamic Binding.	7 Marks
	b)	Discuss Action Script 2.0 data checking.	7 Marks
		(OR)	
4	a)	Explain in detail about how a class is declared with properties and methods.	7 Marks
	b)	Discuss about Action Script 2.0 data checking.	7 Marks

UNIT-III

5		Define Exception. Differentiate it with compile time errors and also give one example in Action Script.	14 Marks
		(OR)	
6	a)	Describe about mouse event classes in Action Script.	7 Marks
	b)	Explain the polymorphism and dynamic binding in Action Script.	7 Marks

UNIT-IV

7	a)	Explain how to handle Component events.	7 Marks
	b)	Explain about Hypermedia.	7 Marks
		(OR)	
8	a)	Explain Arithmetic coding with an example.	7 Marks
	b)	What is Quantization? Explain.	7 Marks

UNIT-V

9	a)	How many sub layers are there in ATM? What are they?	7 Marks
	b)	Draw and explain general architecture of Set-top Box.	7 Marks
		(OR)	
10	a)	What are the important parameters of QoS for multimedia data transmission?	7 Marks
	b)	Explain IP-Multicast.	7 Marks

CODE No.:14BT71202 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

MULTIMEDIA AND APPLICATION DEVELOPMENT

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Discuss Graphics and Image Data types.	14 Marks
		(OR)	
2	a)	Explain features of Action Script.	7 Marks
	b)	List out various data types and type checking in action script.	7 Marks

UNIT-II

3	a)	Describe about Bound methods in Action Script.	7 Marks
	b)	Write about associative arrays and objects.	7 Marks
		(OR)	
4	a)	Explain in detail about Inheritance with suitable example.	7 Marks
	b)	Discuss about overriding methods and properties.	7 Marks

UNIT-III

5		Write an action script to convert Indian currency to foreign currency.	14 Marks
		(OR)	
6	a)	Discuss Nyquist Theorem.	7 Marks
	b)	Explain Signal to Quantization Noise Ratio.	7 Marks

UNIT-IV

7	a)	Explain how to handle Component events.	7 Marks
	b)	Explain about Hypermedia.	7 Marks
		(OR)	
8	a)	Explain Arithmetic coding with an example.	7 Marks
	b)	What is Quantization? Explain.	7 Marks

UNIT-V

9	a)	How many sub layers are there in ATM? What are they?	7 Marks
	b)	Draw and explain general architecture of Set-top Box.	7 Marks
		(OR)	
10	a)	Write short notes on video bitrates over ATM.	6 Marks
	b)	Explain Staggered Broadcasting and Pyramid Broadcasting.	8 Marks

CODE No.:14BT71204 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

SOFTWARE TESTING TECHNIQUES

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	State and explain the principles of software testing.	7 Marks
	b)	Design the Traceability Matrix for scientific calculator.	7 Marks
		(OR)	
2	a)	Why do we have defects in software? Explain the defect classification.	7 Marks
	b)	Explain the characteristics of defect management process.	7 Marks

UNIT-II

3	a)	Distinguish between verification and validation.	7 Marks
	b)	Give the methods of verification.	7 Marks
		(OR)	
4	a)	Classify the defects and explain the techniques for finding the defects.	9 Marks
	b)	Recall the roles and responsibilities of V-V model.	5 Marks

UNIT-III

5	a)	Explain any two Data Flow Testing strategies.	6 Marks
	b)	Implement Path Testing Strategy using Path Sensitization for ATM transaction.	8 Marks
		(OR)	
6	a)	Explain in detail the transaction flow testing techniques.	9 Marks
	b)	Discuss how link counters are useful in Path Instrumentation method.	5 Marks

UNIT-IV

7	a)	What are the useful models for describing software behaviour?	7 Marks
	b)	How 4 kinds of outputs are represented through Tape control recovery state graph?	7 Marks
		(OR)	
8	a)	Narrate the 4 areas of decision table with an example.	7 Marks
	b)	Discuss the role of KV charts in reducing Boolean algebra expressions.	7 Marks

UNIT-V

9	a)	When to use automation in testing? Discuss the problems.	7 Marks
	b)	Distinguish between static and dynamic testing tools.	7 Marks
		(OR)	
10	a)	Mention the characteristics of good test scenario and good test case.	7 Marks
	b)	Briefly give an account to build test data.	7 Marks

CODE No.:14BT71205 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

MACHINE LEARNING

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss the Candidate -Elimination algorithm with version spaces.	7 Marks
	b)	Define a well posed learning problem. Explain any two successful applications of machine learning.	7 Marks
		(OR)	
2		Describe ID3 algorithm with an Example.	14 Marks

UNIT-II

3	a)	Explain back propagation algorithm and derive expressions for weight update relations.	7 Marks
	b)	Illustrate the tree representation and cross over operations of the function $\sin(x) + \sqrt{x^2 + y}$.	7 Marks
		(OR)	
4	a)	Differentiate the characteristics of an appropriate ANN problem.	7 Marks
	b)	Explain the steps in a prototypical genetic algorithm.	7 Marks

UNIT-III

5	a)	Describe briefly about Naïve Bayes classification.	10 Marks
	b)	Define Maximum likelihood Estimate.	4 Marks
		(OR)	
6		Describe Expectation Maximization (EM) algorithm.	14 Marks

UNIT-IV

7		Explain in detail about k-nearest neighbor algorithm with an example.	14 Marks
		(OR)	
8	a)	Explain locally weighted regression and remarks on it.	7 Marks
	b)	Describe case based reasoning.	7 Marks

UNIT-V

9		Explain briefly:	
		i) Reinforcement learning.	7 Marks
		ii) Explanation based learning.	7 Marks
		(OR)	
10		Describe the First Order Combined Learner algorithm.	14 Marks

CODE No.:14BT71501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

EMBEDDED SYSTEM PROGRAMMING

[Computer Science and Engineering, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define embedded systems and explain how a computer differs with embedded systems.	7 Marks
	b)	Explain with embedded SoC with its components.	7 Marks
		(OR)	
2	a)	Discuss different design metrics used in embedded systems.	7 Marks
	b)	Explain about complex system design and processors.	7 Marks

UNIT-II

3	a)	Explain bus hand shaking in detail.	7 Marks
	b)	Describe the architecture of a typical 8051 micro controller with a neat diagram.	7 Marks
		(OR)	
4	a)	Illustrate the hardware features of 8051 microcontroller and explain.	7 Marks
	b)	Write C program for toggling a LED which is connected port P2.0 with a delay.	7 Marks

UNIT-III

5	a)	Describe file and I/O subsystems management in RTOS.	7 Marks
	b)	Discuss about different Timer and Event functions in RTOS.	7 Marks
		(OR)	
6		Discuss the following concepts. i) Semaphore functions. ii) Shared data. iii) Pipe functions.	14 Marks

UNIT-IV

7	a)	Describe bout state machine programming models in detail.	7 Marks
	b)	How do you model Multi-processor systems using UML? Explain.	7 Marks
		(OR)	
8	a)	Discuss about the advantages and disadvantages of C++ in embedded programming.	6 Marks
	b)	Discuss about sequential program model of AVCM.	8 Marks

UNIT-V

9	a)	Mention about the Target Hardware Debugging techniques.	7 Marks
	b)	Describe about linking and locating software with an example.	7 Marks
		(OR)	
10	a)	Define Simulator. Differentiate between Emulators and Logic analyzers.	7 Marks
	b)	Explain the fundamental issues in hardware and software co-design.	7 Marks

CODE No.:14BT71502 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

NETWORK PROGRAMMING

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Draw and explain the layers in OSI model.	7 Marks
	b)	Discuss in detail about TCP Connection Establishment and Termination mechanism.	7 Marks
		(OR)	
2	a)	Explain the following functions. i) inet_aton. ii) inet_addr. iii) inet_ntoa.	7 Marks
	b)	Briefly explain various socket functions for elementary TCP client/server.	7 Marks

UNIT-II

3	a)	Implementation of TCP Echo client (str_cli) using select function.	7 Marks
	b)	Discuss in detail about handling SIGCHILD signal.	7 Marks
		(OR)	
4	a)	Describe about batch input and shutdown function.	7 Marks
	b)	Implementation of TCP Echo server using poll function.	7 Marks

UNIT-III

5	a)	Write a sample to discuss the lack of flow control with UDP.	7 Marks
	b)	How getaddr info function is applicable to IPV6.	7 Marks
		(OR)	
6	a)	Explain UDP echo server function in detail.	7 Marks
	b)	Discuss about elementary name and address conversions.	7 Marks

UNIT-IV

7	a)	Compare IPC functionality provided by pipes and message queues.	7 Marks
	b)	Explain FIFO mechanism with client/server.	7 Marks
		(OR)	
8	a)	Describe popen and pclose functions.	7 Marks
	b)	Write a short note on IPC permissions.	7 Marks

UNIT-V

9	a)	Explain about Terminal line disciplines in detail.	7 Marks
	b)	Discuss about rlogin.	7 Marks
		(OR)	
10	a)	Write in detail about control terminals.	7 Marks
	b)	Explain about Pseudo-Terminals.	7 Marks

CODE No.:14BT81202 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations June - 2019

CRYPTOGRAPHY AND NETWORK SECURITY

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Show the relationship between security mechanisms and services in terms of matrix.	7 Marks
	b)	Explain any three mono-alphabetic cipher techniques with example.	7 Marks
		(OR)	
2	a)	Apply Playfair cipher with the key word “KEYWORD" and encrypt the following plaintext “ALLTHEBEST”.	7 Marks
	b)	Demonstrate model for network security with a neat diagram.	7 Marks

UNIT-II

3	a)	What is the significance of block cipher modes of operation? Explain different types of block cipher modes.	9 Marks
	b)	How authentication and confidentiality is provided by public key cryptosystems?	5 Marks
		(OR)	
4	a)	Explain the Diffie- Hellman key exchange algorithm.	6 Marks
	b)	Draw and explain the single round of DES algorithm. What is the strength of DES?	8 Marks

UNIT-III

5	a)	Write the uses of MAC and Hash functions.	7 Marks
	b)	How authentication is provided with SHA algorithm?	7 Marks
		(OR)	
6	a)	Draw the X.509 V1, V2 and V3 certificate formats.	7 Marks
	b)	Describe the Kerberos V4.	7 Marks

UNIT-IV

7	a)	How E-mail security is provided using PGP?	10 Marks
	b)	Write short notes on S/MIME functionality.	4 Marks
		(OR)	
8	a)	Who are the participants of SET? Explain complete transactions of SET.	10 Marks
	b)	Write the services provided by SSL record protocol.	4 Marks

UNIT-V

9	a)	With a neat diagram, explain digital immune systems.	7 Marks
	b)	What are advantages and disadvantages of Application Gateways?	7 Marks
		(OR)	
10	a)	Explain various Intrusion techniques.	7 Marks
	b)	Explain attacks on packet filtering firewall. What are the counter measures of these attacks?	7 Marks

CODE No.:14BT5HS02 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Regular/Supplementary Examinations April - 2019

MANAGEMENT SCIENCE

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Is management an art or science, Explain?	CO1	7 Marks
	b)	Explain the social responsibility of any business in the present market scenario of India.	CO5	7 Marks
		(OR)		
2	a)	Explain environmental scanning within an organization's internal and external environment.	CO1	7 Marks
	b)	Discuss elements of corporate planning process.	CO1	7 Marks

UNIT-II

3	a)	Explain the basic procedure involved in method study.	CO5	7 Marks
	b)	Define quality and explain about control charts used for attributes and variables.	CO1	7 Marks
		(OR)		
4	a)	List and explain types of inventory.	CO1	5 Marks
	b)	Explain distribution channels in marketing with example.	CO2	9 Marks

UNIT-III

5	a)	Define employee motivation. Explain Herzberg's two-factor theory.	CO3	7 Marks
	b)	Classify various methods used for Job evaluation and list advantages and limitations.	CO5	7 Marks
		(OR)		
6		State the difference between need and want. Describe Maslow's theory of human needs.	CO1	14 Marks

UNIT-IV

7	a)	Distinguish between Entrepreneur and Manager.	CO4	7 Marks
	b)	Explain about Women as an entrepreneur.	CO4	7 Marks
		(OR)		
8		The following table gives the activities and duration of a construction project.	CO2	14 Marks

Activity	1-2	1-3	2-4	3-4	3-5	4-5	4-6	5-6
Duration (Days)	6	5	10	3	4	6	2	9

i) Draw the network for the project.
ii) Find critical path.
iii) Calculate all the floats involved in CPM.

UNIT-V

9	a)	What is JIT? Explain the characteristics of Just-In-Time.	CO5	7 Marks
	b)	What is ERP? Explain its major features.	CO3	7 Marks
		(OR)		
10	a)	What is value chain analysis? Explain its advantages.	CO3	7 Marks
	b)	What is Intellectual Property Rights? How to protect IPRs in globalized economy?	CO5	7 Marks

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CODE No.:14BT40502 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Regular/Supplementary Examinations April - 2019

DATABASE MANAGEMENT SYSTEMS

[Electrical and Electronics Engineering, Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss the main characteristics of the database approach. How does it differ from traditional file systems?	CO1	7 Marks
	b)	Discuss the activities of Database Users and Administrators. Also list any six database applications.	CO1	7 Marks
		(OR)		
2	a)	Explain the following terms with examples i) Entity Set ii) Relationship iii) Relationship Set	CO1	7 Marks
	b)	Explain about two-tier and three-tier architectures of database systems with neat diagrams.	CO1	7 Marks

UNIT-II

3	a)	What is a relational model? Explain its concept.	CO2	6 Marks
	b)	Define a View. Discuss about operations that are performed on view.	CO2	8 Marks
		(OR)		
4	a)	Differentiate Relational Algebra, Relational Calculus and SQL.	CO3	6 Marks
	b)	Explain the following with examples. i) SELECTION ii) JOIN iii) CARTESIAN PRODUCT iv) OUTER-JOIN	CO3	8 Marks

UNIT-III

5	a)	Write the basic structure of SQL. Explain about Group functions used in it with examples.	CO3	8 Marks
	b)	Differentiate Nested and Correlated queries.	CO3	6 Marks
		(OR)		
6	a)	Why the normalization is needed? Explain its concept.	CO3	6 Marks
	b)	Explain in detail about 4NF and 5NF.	CO3	8 Marks

UNIT-IV

7	a)	Describe the properties of a transaction. Discuss about transaction operations.	CO1	8 Marks
	b)	Explain the concept of Testing for Serializability.	CO1	6 Marks
		(OR)		
8	a)	Explain in detail about locking mechanism.	CO2	7 Marks
	b)	Write and explain deadlock handling algorithm.	CO3	7 Marks

UNIT-V

9	a)	What is the difference between conflict serializability and view serializability? Explain in detail with an example.	CO4	7 Marks
	b)	Briefly discuss ACID property with an example.	CO4	7 Marks
		(OR)		
10	a)	Define B+ Tree file organization in detail.	CO5	7 Marks
	b)	Identify a B+ tree to insert the key elements 5, 3, 4, 9, 7, 15, 14, 21, 22, 23 (consider order of the tree is 3).	CO5	7 Marks

CODE No.:14BT70402 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Regular/Supplementary Examinations April - 2019

EMBEDDED SYSTEMS

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Illustrate the RT-level custom single purpose processor design.	CO4	10 Marks
	b)	Differentiate synchronous and asynchronous circuits.	CO4	4 Marks
		(OR)		
2	a)	Write a short note on processor technology used in embedded systems.	CO4	10 Marks
	b)	What is the purpose of the data path and controller?	CO4	4 Marks

UNIT-II

3	a)	Illustrate sequential program model with an example.	CO2	7 Marks
	b)	Develop a Finite State Machine for an elevator.	CO1	7 Marks
		(OR)		
4	a)	Explain about synchronization processes with example.	CO1	7 Marks
	b)	Discuss about Model *vs.* Language in the process of Embedded system design.	CO1	7 Marks

UNIT-III

5	a)	Explain RS-232 interface specifications.	CO1	7 Marks
	b)	What are the advantages of USB over RS-232?	CO1	7 Marks
		(OR)		
6	a)	Where is IEEE 1394 interface used? Explain the protocol architecture of IEEE 1394.	CO1	7 Marks
	b)	Describe the architecture and applications of I^2C bus.	CO1	7 Marks

UNIT-IV

7	a)	Discuss about Clock driven scheduling and event driven scheduling.	CO1	7 Marks
	b)	What is the difference between a General Purpose Kernel and Real-Time kernel? Give an example for both.	CO1	7 Marks
		(OR)		
8	a)	Discus about Interrupt service routines in Real-Time OS.	CO1	7 Marks
	b)	Justify, How signal and pipes are employed for inter task communication?	CO1	7 Marks

UNIT-V

9	a)	What are various types of debugging techniques available in Embedded System Design? Explain in detail.	CO1	7 Marks
	b)	Discuss about Host and Target machines.	CO1	7 Marks
		(OR)		
10	a)	Differentiate features of SHARC to ARM micro controllers.	CO2	7 Marks
	b)	Discuss about ARM pipeline with neat diagrams.	CO2	7 Marks

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CODE No.:14BT80101 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Regular/Supplementary Examinations April - 2019

PRESTRESSED CONCRETE

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

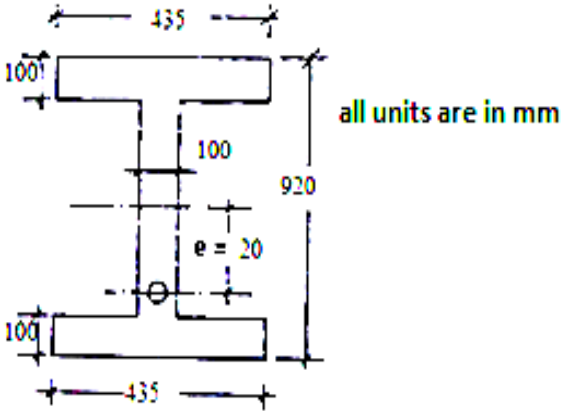
1	Explain various losses of prestress in pre-tensioning and post-tensioning.	CO1	14 Marks
	(OR)		
2	Explain about materials used for prestressed concrete.	CO1	14 Marks

UNIT-II

3	A rectangular concrete beam of cross section 250mm x 350mm is prestressed by means of 12 wires of diameter located at 50mm from the soffit of the beam and 3 numbers of 5 mm diameter wires are located at top. Assuming prestress in the steel is 1050N/mm², Evaluate the stresses at extreme fibers. When the beam supporting its own weight over a span of 6m.Assume live load of 2.8 kN/m.	CO2	14 Marks
	(OR)		
4	Prestressed concrete beam of section 150mm x 350mm is used over effective span of 6m to support a uniformly distributed .load of 4.5kN/m (inclusive self weight). The beam is prestressed by a bent cable carrying a force of 250kN located at an eccentricity of 50mm from the soffit and zero eccentricity at support sections. Determine resultant stresses in the beam at quarter and central span sections.	CO2	14 Marks

UNIT-III

5	Design a simply supported Type-1 prestressed beam with total moment M_T = 435 kN-m (including an estimated self-weight moment M_{sw} = 55 kN-m). The height of beam is 920mm. The prestress at transfer f_{po} = 1035 N/mm² and at service f_{pe} = 860 N/mm². Based on grade of concrete, allowable compressive stresses are 12.5 N/mm² at transfer and 11 N/mm² at service. Type of prestressing tendon is 7 wire strands. Nominal diameter of a tendon is 12.8mm and nominal area 99.3 mm².	CO3	14 Marks
	(OR)		
6	Design stirrups for the type-1 prestressed beam with the following section	CO3	14 Marks



Longitudinal reinforcement of 12mm diameter is provided to hold the stirrups. Let area of the section A = 159,000 mm^2, moment of inertia I = 1.7808 x 10^{10} mm^4, Area of prestressing steel = 960 mm^2, M35 grade of concrete is used. Characteristic tensile strength of tendon is f_{pk} = 1470 N/mm^2 and effective prestress is f_{pe} = 860 N/mm^2. The uniformly distributed load including self-weight acting on the beam is 30.2kN/m. Let the span of the beam is 10.7m and width of bearing is 400mm. Assume the clear cover to longitudinal reinforcement is 30mm.

UNIT-IV

7	a)	What is meant by transmission length?	CO1	7 Marks
	b)	Sketch the anchorage zone stress variation within the end block of a psc beam.	CO1	7 Marks

(OR)

8		A prestressing force of 250kN is transmitted through a distribution plate 120mm wide and 120mm deep ,the center of which is located at 100mm from the bottom of an end block having a section 120mm wide and 300mm deep. Evaluate the position and magnitude of the maximum tensile stress on horizontal section passing through the center of the distribution plate using the methods of i) magnel ii) Guyon. Design reinforcement for end block.	CO3	14 Marks

UNIT-V

9		A simply supported concrete beam of span 8m and rectangular cross section 125mm wide and 250mm deep is prestressed by a single cable in which the total tensile force is 220 kN. The centre line of the cable is parallel to the axis of the beam and 75mm above the soffit over the middle third of the span and is cured upward in a parabola over the outer-thirds of the span to a distance of 175mm above the soffit at the supports. If the modulus of elasticity of concrete is 35 kN/mm^2 and the density of concrete is 24 kN/m^3, Calculate;		
		i) the upward deflection at mid span due to prestress only	CO2	4 Marks
		ii) the deflection when the beam is supporting its own weight and	CO2	5 Marks
		iii) the magnitude of concentrated loads Q placed at the third points of the span, which would result in a limiting short term deflection of span/500.	CO2	5 Marks

(OR)

10		Explain short term deflections of uncracked members.	CO1	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Regular/Supplementary Examinations April - 2019

ESTIMATION, COSTING & VALUATION

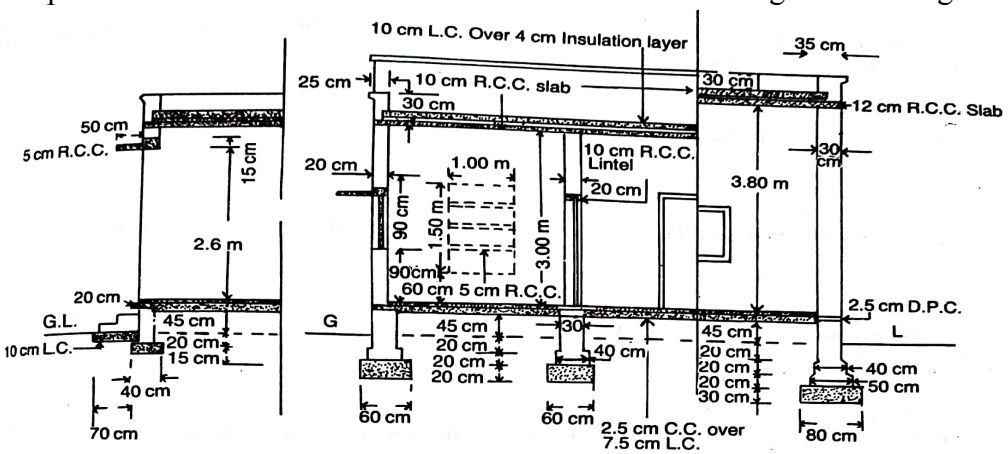
[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

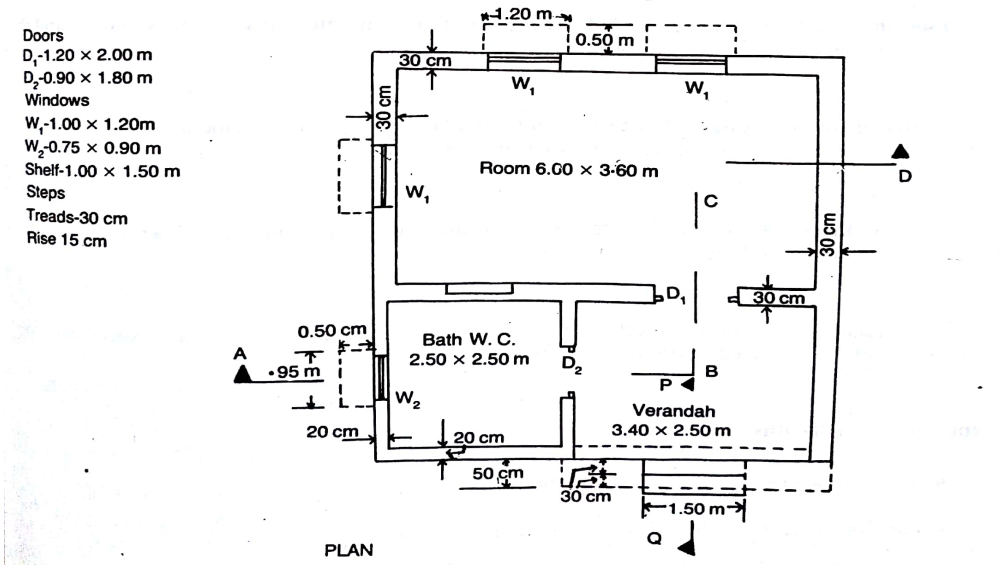
1	a)	Briefly explain the considerations in estimation for deduction of openings for arch masonry calculations.	CO1	7 Marks
	b)	What is line plan? Explain centre line method of estimation.	CO1	7 Marks
		(OR)		
2		Prepare the detailed estimate of a site office block from the given drawing:	CO1	14 Marks



SECTION-PQ

SECNL ELEVATION ON ABCD

Doors
D_1-1.20 × 2.00 m
D_2-0.90 × 1.80 m
Windows
W_1-1.00 × 1.20m
W_2-0.75 × 0.90 m
Shelf-1.00 × 1.50 m
Steps
Treads-30 cm
Rise 15 cm



PLAN

UNIT-II

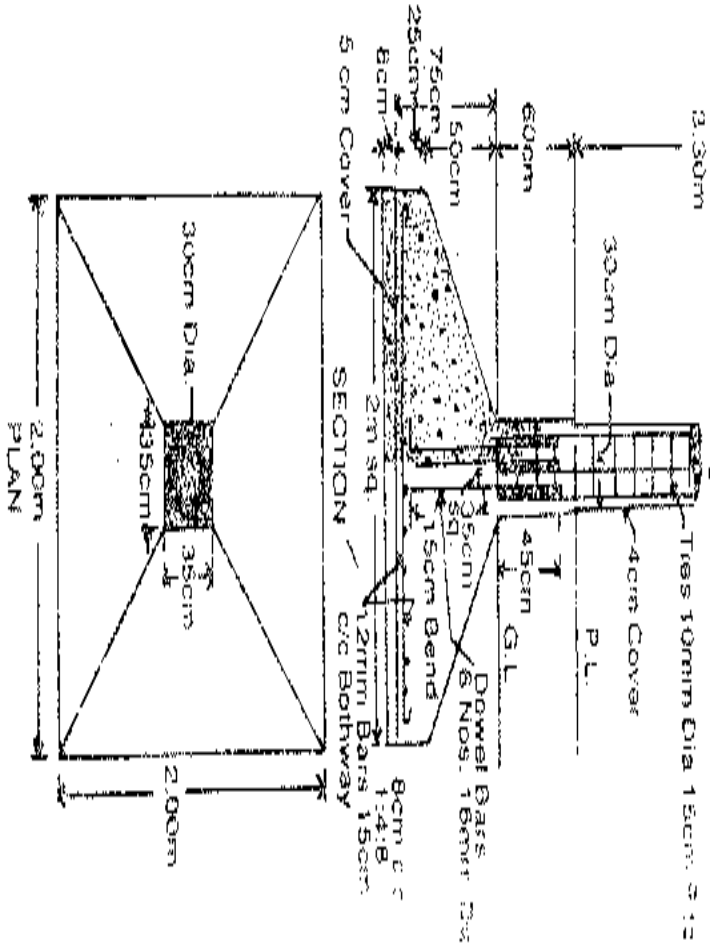
3 a) Calculate the quantity of earth work on road embankment from chainage 0 to 90 m with the following data. CO2 7 Marks

Formation width = 10.0 m

Slope in banking = 2:1

Chainage (m)	0	30	60	90
Height of embankment (m)	2.41	2.91	1.01	1.09

b) Prepare a schedule of bars for the RCC footing shown in the figure below. CO2 7 Marks



(OR)

4 Prepare a detailed estimate for supplying, laying and jointing 200 mm diameter glazed stone ware pipe line jointing with 1:2 cement mortar. Measurement of trench is 120 m x 0.6 m x 0.6 m. CO1 14 Marks

UNIT-III

5 a) Write the detailed specifications of Lime concrete in roof terracing. CO1 5 Marks

b) What is meant by overhead costs? CO1 2 Marks

c) Evaluate the cost of M15 grade concrete in foundation with brick ballast of 40mm thick- take 10cum. CO2 7 Marks

(OR)

6 a) Write the general specifications of third class and fourth class building. CO1 5 Marks

b) Evaluate the cost of brick work (I class) in super structure with 20 x 10 x 10 cm Brick with 1:5 cement mortars. Take 15cum. CO2 9 Marks

UNIT-IV

7		What is contract? Explain the different types of contract for execution of civil engineering works.	CO3	14 Marks

(OR)

8	a)	Prepare a tender schedule for a school building to be executed on behalf of Department of Higher Education.	CO3	7 Marks
	b)	Write note on Arbitration and legal requirements.	CO3	7 Marks

UNIT-V

9	a)	What is valuation? What is the necessity of valuation?	CO3	4 Marks
	b)	A building is constructed at a cost of Rs. 2, 50,000 on a land purchased at Rs. 50,000. The owner of the property expects a return of 9% on the cost of construction and 8% on the cost of land. The building is estimated to have future life of 60 yrs at the end of which it requires Rs. 3, 25,000 for constructing of a new building in its place. Determine the standard rent of the property given i) Rate of interest for sinking fund at 6 % ii) Annual repairs at 1.5 % the cost of construction iii) All other outgoings is 28 % of the net income of the property iv) Scrap value at the end of the usual life of the building as 10%.	CO3	10 Marks

(OR)

10	a)	Write short note on: i) capitalized value ii)Depreciation iii) Escalation iv) Mortgage	CO3	7 Marks
	b)	A colonizer intends to purchase a land of 100,000 sq.m area located in the suburb of a big city to develop it into plots of 700 sq.m each after providing necessary roads and parks and other amenities. The current sale price of small plots in the neighborhood is Rs.30.00 per sq.m. The colonizer wants a net profit of 20%. Work out the maximum price of the land at which the colonizer may purchase the land.	CO3	7 Marks

CODE No.:14BT80105 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Regular/Supplementary Examinations April - 2019

WATERSHED MANAGEMENT

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the concept and objectives of watershed development.	CO1	7 Marks
	b)	Briefly explain the necessity of watershed development.	CO6	7 Marks
		(OR)		
2		Enumerate the socio-economic characteristics of watershed management.	CO1	14 Marks

UNIT-II

3	a)	What are the different types of soil erosion and also discuss the effects of erosion on soil fertility?	CO1	7 Marks
	b)	How to estimate the soil erosion by Universal soil loss equation?	CO1	7 Marks
		(OR)		
4		Explain various factors effecting erosion of soil in a watershed and discuss any four control measures.	CO1	14 Marks

UNIT-III

5	a)	Define rainwater harvesting. List the different components of rainwater harvesting.	CO2	7 Marks
	b)	List the different advantages and disadvantages of rainwater harvesting.	CO2	7 Marks
		(OR)		
6	a)	Define land use and land cover and land capability.	CO3	7 Marks
	b)	Explain the Classification of Land Capability Class in details.	CO2	7 Marks

UNIT-IV

7		What is cropping pattern? Discuss about how sustainable agriculture can be achieved in a watershed.	CO3	14 Marks
		(OR)		
8		Discuss the following i) dry land agriculture ii) social forestry and afforestation iii) silvipasture	CO1	14 Marks

UNIT-V

9	a)	Define People's participation in watershed management.	CO3	7 Marks
	b)	Discuss the advantages of people participation in management program.	CO3	7 Marks
		(OR)		
10		Briefly discuss the different activities required for the planning of watershed management activities in rural watershed.	CO2	14 Marks

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CODE No.:14BT80106 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Regular/Supplementary Examinations April - 2019

INDUSTRIAL WASTE WATER TREATMENT

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is meant by toxic substances? Explain it briefly.	CO1	4 Marks
	b)	Design a primary settling tank to handle an average rate of flow of 10 MLD.	CO1	10 Marks
		(OR)		
2	a)	Write about characteristics of waste water and the per capita contributions of total solids, suspended solids and BOD of different Indian cities.	CO1	7 Marks
	b)	What are the effects of DO on aquatic life? Explain briefly.	CO1	7 Marks

UNIT-II

3	a)	Explain about trickling filters with neat sketch.	CO2	7 Marks
	b)	Write about microbiological metabolism in aquatic environment.	CO3	7 Marks
		(OR)		
4	a)	Comparison between Complete mix and Plug flow systems.	CO1	7 Marks
	b)	In a secondary settling tank what is the recommended OFR for a MLSS Value of 3000-mg/L and recirculation ratio of 0.25?	CO1	7 Marks

UNIT-III

5		Brief the various aerobic and anaerobic treatment methods conventionally used in industrial wastewater treatment.	CO3	14 Marks
		(OR)		
6		Explain the design and operation of anaerobic filters.	CO3	14 Marks

UNIT-IV

7		What is meant by Equalization? What is the purpose of equalization? What are the methods of equalization and explain any two methods of mixing.	CO4	14 Marks
		(OR)		
8	a)	How to control industrial waste water by neutralization? What are its advantages?	CO4	7 Marks
	b)	Describe the massive lime treatment for color removal in pulp and paper mill.	CO4	7 Marks

UNIT-V

9	a)	What are the merits and demerits of common effluent treatment plants?	CO5	7 Marks
	b)	Explain, How you treat a cluster of tannery plants effluent as a common treatment process?	CO5	7 Marks
		(OR)		
10	a)	What are the sources of various pollution in an integrated cotton Textile mill? Give a plan for the control of this pollution.	CO5	7 Marks
	b)	With the neat process flow sheet, highlight the origin and characterization of wastewater generated in typical tannery industry.	CO5	7 Marks

CODE No.:14BT80110 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Regular/Supplementary Examinations April - 2019

GROUND IMPROVEMENT TECHNIQUES

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Role of Ground improvement on Foundations.	CO1	7 Marks
	b)	Discuss the suitability of ground improvement techniques for different soils.	CO1	7 Marks
		(OR)		
2	a)	Explain methods of ground improvement and illustrate with the help of diagrams.	CO1	7 Marks
	b)	Report the selection criterion for ground improvement based on soil conditions.	CO1	7 Marks

UNIT-II

3	a)	Illustrate various drainage techniques with suitable diagrams.	CO1	7 Marks
	b)	Illustrate flownet for a weir with cuff off wall on both on upstream and downstream.	CO1	7 Marks
		(OR)		
4	a)	Discuss about "vacuum and electro-osmotic" methods.	CO1	7 Marks
	b)	Contrast "Fully and partially penetrating slots in homogenous deposits" with the help of neatly labelled Sketch.	CO1	7 Marks

UNIT-III

5	a)	Explain in details the role of ground improvement in foundation engineering.	CO1	7 Marks
	b)	Explain single and multistage well point system of dewatering.	CO2	7 Marks
		(OR)		
6	a)	Explain the open sumps and vacuum well dewatering systems.	CO3	7 Marks
	b)	What are the filter requirements of a filler material around the drains?	CO1	7 Marks

UNIT-IV

7	a)	Write in detail about stabilisation of expansive soils.	CO1	7 Marks
	b)	Explain in brief various grout injection methods.	CO1	7 Marks
		(OR)		
8	a)	Describe in detail the various applications of grouting.	CO2	7 Marks
	b)	Write a detailed note on the following: i) Portland Cement Stabilisation ii) Bituminous stabilization.	CO1	7 Marks

UNIT-V

9	a)	Discuss, Why earth need to be reinforced?	CO2	7 Marks
	b)	Illustrate with the help of neatly labelled Sketches: "Types of reinforcement materials."	CO2	7 Marks
		(OR)		
10	a)	Discuss the functions of Geosythetics.	CO2	7 Marks
	b)	Discuss the uses of Geosythetics.	CO2	7 Marks

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CODE No.:14BT80113 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Regular/Supplementary Examinations April - 2019

ARCHITECTURE AND TOWN PLANNING

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain about various stages involved in surveying for site analysis.	CO1	7 Marks
	b)	Briefly explain about interior design.	CO1	7 Marks
		(OR)		
2		Define architectural design? Explain importance of integration of function and aesthetics, and how to achieve it.	CO1	14 Marks

UNIT-II

3	a)	Explain in detail about space and safety standards according to national building code.	CO1	7 Marks
	b)	What are various types of climates?	CO1	7 Marks
		(OR)		
4	a)	Write short notes on Green building concept.	CO1	7 Marks
	b)	Explain the factors effecting to determine the climate.	CO1	7 Marks

UNIT-III

5	a)	Explain in detail about models of planning process.	CO1	7 Marks
	b)	What are the aims and objectives of town planning?	CO1	7 Marks
		(OR)		
6	a)	Write short notes on levels of planning and their interrelationship in India.	CO1	7 Marks
	b)	What is the importance of Garden Cities? How can we call a city as Garden City?	CO1	7 Marks

UNIT-IV

7	a)	Explain the importance of byelaws in architecture.	CO1	7 Marks
	b)	Explain various basic principles of landscape design.	CO1	7 Marks
		(OR)		
8		Write a short notes on the following: i) Locational attributes for land use. ii) Scope and objectives of different types of development plans.	CO3	14 Marks

UNIT-V

9	a)	What are Isometric and Exonometric projections?	CO1	7 Marks
	b)	Mention the importance of architectural drawings.	CO1	7 Marks
		(OR)		
10		Write a short notes on the following: i) Cluster method. ii) Delineation techniques for various types of regions.	CO3	14 Marks

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CODE No.:14BT80201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Regular/Supplementary Examinations April - 2019

UTILIZATION OF ELECTRICAL ENERGY

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Derive an expression for the temperature rise of an electric motor. State the assumptions made.	CO1, CO4	7 Marks
	b)	The temperature rise of a motor when operating for 25 minutes on full load is 25^0C and becomes 40^0C when operates for another 25 minutes on same load. Determine the heating time constant and steady state temperature rise.	CO1, CO4	7 Marks
		(OR)		
2	a)	Discuss the advantages and disadvantages of electric drive over other drives.	CO1, CO5	4 Marks
	b)	A 230V dc shunt motor with constant field drives a load whose torque is proportional to its speed. When running at 750rpm it takes 40A. Find the speed at which it will run if a 10Ω resistance is connected in series with its armature. The resistance of armature may be neglected.	CO1, CO5	10 Marks

UNIT-II

3	a)	Define luminous flux, luminous intensity, illumination, lamp efficiency, Utilization factor and maintenance factor.	CO1	7 Marks
	b)	An illumination of 500 flux is to be provided in a room of 30x20 metres with 50W and 5 feet fluorescent lamp. Find out the number of lamps and design the layout in the lighting installation.	CO3	7 Marks
		(OR)		
4	a)	Explain the construction and working principle of sodium vapor discharge lamp with neat sketch.	CO1	7 Marks
	b)	A small light source with intensity uniform in all directions is mounted at a height of 10m above a horizontal surface. Two points A and B both lie on the surface with point A directly beneath the source. How far is point B from point A, if the illumination at point B is only 1/10 as great as at point A?	CO4	7 Marks

UNIT-III

5	a)	Describe with the help of neat sketch, the working of vertical core type induction furnace.	CO1, CO5	7 Marks
	b)	Estimate the efficiency of a high frequency induction furnace which takes 10 minutes to melt 1.8Kg of aluminium. The input to the furnace being 5KW and initial temperature 15^0C. Given specific heat of aluminum = 880J/Kg/^{o}**C**, Melting point of aluminum = 660^0**C**. Latent heat of fusion of aluminum = 32**KJ/Kg** and **1**J = 2.78×10^{-7} KWh.	CO1, CO5	7 Marks
		(OR)		

6	a)	Compare between AC and DC Welding.	CO1, CO5	6 Marks
	b)	With the help of neat sketch explain the principle of i) Spot welding; ii) Seam welding.	CO1, CO5	8 Marks

UNIT-IV

7	a)	DC series motors are ideally suited for traction purpose, Justify.	CO5	7 Marks
	b)	Explain in detail about regenerative braking applied to induction motor.	CO5	7 Marks
		(OR)		
8	a)	Explain in detail about plugging applied to induction motor.	CO5	7 Marks
	b)	Write the merits of various methods of electric braking.	CO1	7 Marks

UNIT-V

9	a)	Prove that the crest speed of main line services with trapezoidal speed time curve can be obtained by the formula. $$V_m = \frac{T}{K} - \sqrt{\frac{T^2}{K^2} - \frac{7200S}{K}}$$ $$Where \quad K = \frac{1}{\alpha} + \frac{1}{\beta}$$	CO1	7 Marks
	b)	An electric train has a schedule speed of 25kmph between stations 800 meters apart. The duration of station stop is 20 seconds; the maximum speed is 20 percent higher than the average running speed and the braking retardation is 3kmphps. Calculate the rate of acceleration required to operate this service.	CO1, CO4	7 Marks
		(OR)		
10	a)	Explain the terms "Dead weight", "Effective weight" and Adhesive weight" in a locomotive.	CO1, CO4	4 Marks
	b)	Derive the expression for specific energy consumption by considering simplified speed time curve and what are the factors effecting specific energy consumption.	CO4	10 Marks

CODE No.:14BT80202 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Regular/Supplementary Examinations April - 2019

HVDC AND FACTS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Prove that power loss in a bipolar D.C. system is 0.75 times that required for 3- phase, 3 wire A.C. systems. Assume that power transmitted and insulation level is same for both systems.	CO2	8 Marks
	b)	List the disadvantages of HVDC transmission System.	CO1	6 Marks
		(OR)		
2	a)	Analyze a six pulse converter bridge circuit without overlap angle. Deduce the relevant equations and draw the output voltage waveform for delay angle 30^o.	CO2	8 Marks
	b)	Draw a schematic diagram of HVDC transmission system and write components in it.	CO1	6 Marks

UNIT-II

3	a)	Derive expression for current harmonics in a 6 pulse converter when transformer winding is Star-Star connected.	CO2	7 Marks
	b)	Explain the various AC filters that are used in HVDC system.	CO2	7 Marks
		(OR)		
4	a)	What is meant by reactive power control? How it is achieved? Explain in detail.	CO1	10 Marks
	b)	Discuss about characteristic and non-characteristic harmonics generated in HVDC systems.	CO1	4 Marks

UNIT-III

5	a)	What are the causes of reactive power deficit in power systems? Explain.	CO1	7 Marks
	b)	Explain the power flow in AC transmission with meshed connections.	CO1	7 Marks
		(OR)		
6		Explain the basic types of FACTS controllers and their relative importance.	CO2, CO3	14 Marks

UNIT-IV

7	a)	What are the objectives of shunt compensators?	CO1	6 Marks
	b)	Explain the operation of TCR with relevant waveforms.	CO2, CO3	8 Marks
		(OR)		
8	a)	Explain the different modes of operations of TCSC?	CO2, CO3	7 Marks
	b)	Explain how series compensation will increase the dynamic stability limit.	CO2, CO3	7 Marks

UNIT-V

9	a)	Explain how the UPFC can control real and reactive power flow in the transmission line.	CO2, CO3	7 Marks
	b)	Explain about multidimensional FACTS controller.	CO2, CO3	7 Marks
		(OR)		
10		Discuss basic operating principles and control characteristics of IPFC.	CO2, CO3	14 Marks

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CODE No.:14BT80203 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Regular/Supplementary Examinations April - 2019

POWER QUALITY

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are major power quality issues? Explain in detail.	CO1	7 Marks
	b)	List out various power quality standards.	CO5	7 Marks
		(OR)		
2	a)	Discuss about the responsibilities of suppliers and end users of electric power in maintaining power quality.	CO2	7 Marks
	b)	What is the significance of CBEMA and ITI curves in power quality evaluation?	CO1	7 Marks

UNIT-II

3	a)	Explain the concept of area of vulnerability for estimating voltage sag performance.	CO2	7 Marks
	b)	Discuss long duration voltage variations in power system.	CO1	7 Marks
		(OR)		
4	a)	Explain various causes of voltage sags and effect of voltage sags on loads.	CO1	7 Marks
	b)	Discuss various solutions at the end user level for protection from voltage sag.	CO2	7 Marks

UNIT-III

5	a)	What are general causes of harmonics in power systems?	CO2	7 Marks
	b)	Explain about Voltage limit evaluation procedure.	CO2	7 Marks
		(OR)		
6	a)	Describe how fluorescent lighting and adjustable speed drives for HVAC and elevator loads become sources of harmonics.	CO3	7 Marks
	b)	Explain how harmonic sources can be located.	CO3	7 Marks

UNIT-IV

7	a)	Discus various power quality monitoring equipment.	CO1	7 Marks
	b)	State the significance and objectives of power quality monitoring.	CO1	7 Marks
		(OR)		
8	a)	Discuss the assessment of power quality measurement data.	CO1	7 Marks
	b)	Explain power quality monitoring standards.	CO5	7 Marks

UNIT-V

9	a)	Discuss the power quality enhancement using network reconfiguration type custom power devices.	CO4	7 Marks
	b)	Explain the working principle of Unified Power Quality Conditioner (UPQC).	CO1	7 Marks
		(OR)		
10	a)	Explain Dynamic Voltage Restorer (DVR) for mitigation of voltage sag.	CO4	7 Marks
	b)	Explain the working principle of Solid State Current limiter (SSCL).	CO1	7 Marks

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CODE No.:14BT80206 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Regular/Supplementary Examinations April - 2019

SMART GRID TECHNOLOGY

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Draw and explain the features of distribution network active management scheme and also explain the architecture of DMSC.	CO1	14 Marks
		(OR)		
2	a)	Explain the concept of virtual power plant in smart grid technology.	CO1	6 Marks
	b)	Explain the following i) Galvin electricity initiative. ii) Xcel energy's Smart Grid.	CO1	8 Marks

UNIT-II

3	a)	Explain about the Overview of Smart Grid communication systems.	CO1	7 Marks
	b)	Explain about the switching techniques used in Smart Grid.	CO1	7 Marks
		(OR)		
4	a)	Explain in detail about TCP/IP and it is role in Smart grid.	CO2	8 Marks
	b)	Write short notes on Optical fiber Cables and its use in smart grid communication.	CO2	6 Marks

UNIT-III

5		Explain various encryption standards followed in smart grid information security.	CO1	14 Marks
		(OR)		
6	a)	Explain the various Standards for information exchange.	CO1	7 Marks
	b)	Differentiate IEC 61850 protocol and Distribution Network Protocol.	CO4	7 Marks

UNIT-IV

7	a)	Explain how automatic meter reading can make the system smarter.	CO1	7 Marks
	b)	Explain the evaluation of electricity metering and key components of smart metering.	CO1	7 Marks
		(OR)		
8	a)	Explain in detail about an overview of the Hardware of the Smart meter and applications.	CO1	7 Marks
	b)	Write down the category of the Smart meters and Explain.	CO1	7 Marks

UNIT-V

9	a)	Write short note on state estimation.	CO3	7 Marks
	b)	Explain in detail about Outage Management Systems.	CO3	7 Marks
		(OR)		
10		A 50 MVA 11 kV generator has $Z_1 = Z_2 = j0.25$p.u, $Z_0 = j0.08$p.u. A line to ground fault occurs on the generator terminals. Find the fault current and line to line voltages during limit conditions. Assume that the generator neutral is grounded and that the generator is operating at half load and at rated voltage at the occurrence of fault.	CO3	14 Marks

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CODE No.:14BT80209 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Regular/Supplementary Examinations April - 2019

SOLAR AND WIND ENERGY CONVERSION SYSTEMS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Explain the principle and application of wind electric system. State the basic components and their working in wind electric system.	CO1	14 Marks
		(OR)		
2		Distinguish clearly between; i) Constant speed constant frequency WTG unit. ii) Variable speed constant frequency WTG system. iii) Nearly constant speed constant frequency system.	CO2	14 Marks

UNIT-II

3	a)	Explain the principle of operation of PV cell with suitable sketches.	CO1	7 Marks
	b)	Draw the solar thermal power plant schematic for generating electricity and explain working.	CO1	7 Marks
		(OR)		
4		What are the factors influencing electrical design of solar array? Explain about them.	CO3	14 Marks

UNIT-III

5	a)	Write a short note on basic switching devices used in power converters, which are meant to be used in PV power system.	CO1	7 Marks
	b)	Explain the harmonic reduction techniques used in grid connected solar PV power systems.	CO2	7 Marks
		(OR)		
6	a)	What are the fundamental requirements on the PV power system for interfacing with grid?	CO2	7 Marks
	b)	Explain any one Maximum Power Point algorithm used in PV power system.	CO2	7 Marks

UNIT-IV

7		Explain the importance of AC voltage controllers used in Wind Energy Conversion Systems with suitable sketches.	CO1	14 Marks
		(OR)		
8	a)	Describe the generator control schemes used in Wind Energy Conversion Systems.	CO1	7 Marks
	b)	Explain about the Grid related problems that are faced by a Wind Energy Conversion System.	CO2	7 Marks

UNIT-V

9		What are the power quality issues affected by Distributed Generation? Explain about them.	CO3	14 Marks
		(OR)		
10	a)	Draw the electrical schematic of grid - connected PV system. Explain the role of each component represented in the schematic.	CO2	7 Marks
	b)	Draw the electrical schematic of standalone wind power system. Explain the role of each component represented in the schematic.	CO2	7 Marks

CODE No.:14BT80301 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Regular/Supplementary Examinations April - 2019

PRODUCTION AND OPERATIONS MANAGEMENT

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) What is operations management and briefly explain the importance of operation management in industry? CO2 7 Marks

b) Explain how value added activities play a key role in operations management. CO2 7 Marks

(OR)

2 a) Explain how the environment of operations affects the productivity of an organization. CO3 7 Marks

b) Explain how priority and capacity decisions play a key role in production system decisions. CO3 7 Marks

UNIT-II

3 a) Estimate the future demand for the following problem through simple moving average method and find out mean absolute deviation, mean square error, mean forecast error and mean absolute percentage error. CO3 7 Marks

Time (months)	1	2	3	4	5	6	7	8	9	10	11	12
Demand	95	100	87	123	90	96	75	78	106	104	89	83

b) Estimate the future demand for the following problem through weighted moving average method and find out mean absolute deviation, mean square error, mean forecast error and mean absolute percentage error with weights of 0.4, 0.3, 0.2, 0.1. CO3 7 Marks

Time (months)	1	2	3	4	5	6	7	8	9	10	11	12
Demand	650	678	720	785	859	920	850	758	892	920	789	844

(OR)

4 a) Estimate the future demand through single exponential smoothing method for 2019 , 2020 and 2021 for the following problem. CO3 7 Marks

Time (Year)	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Demand	**5.0**	**5.6**	**6.7**	**5.8**	**6.9**	**5.1**	**8.1**

b) Estimate the future demand through simple regression method for 2020, 2022, 2024 and 2026 for the following details. CO3 7 Marks

Time (Year)	**2010**	**2012**	**2014**	**2016**	**2018**
Demand	**75**	**84**	**92**	**98**	**88**

UNIT-III

5 a) What is aggregate planning? Explain the need of aggregate planning. CO1 7 Marks

b) Explain various aggregate production planning strategies. CO1 7 Marks

(OR)

6	a)	Discuss about aggregate planning problem and also discuss about any mathematical model to solve it.	CO1	7 Marks
	b)	Explain the objectives and functions of master production schedule.	CO1	7 Marks

UNIT-IV

7	a)	Discuss the Material Requirement Planning (MRP) logic.	CO2	7 Marks
	b)	What is Enterprise Resource Planning? Explain the main features of ERP.	CO2	7 Marks

(OR)

8	a)	Explain Manufacturing resource planning.	CO2	7 Marks
	b)	Explain Just-In-Time (JIT) philosophy and pull system of materials flow.	CO3	7 Marks

UNIT-V

9	a)	Explain the steps involved in Johnson's algorithm for flow shop scheduling.	CO4	7 Marks
	b)	Consider the following 2 machines and 6 jobs flow shop problem.	CO4	7 Marks

Job	Machine 1	Machine 2
1	5	7
2	10	8
3	8	13
4	9	7
5	6	11
6	12	10

Obtain the optimal schedule and the corresponding make span for the above problem.

(OR)

10		Consider the following flow shop scheduling problem:	CO4	14 Marks

Job	Processing time		
	Machine 1	Machine 2	Machine 3
1	4	5	11
2	12	2	6
3	8	10	14
4	11	11	3

Check whether Johnson's rule can be applied. If not, solve the problem using palmers heuristic.

CODE No.:14BT80302 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Regular/Supplementary Examinations April - 2019

MECHATRONICS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the sequence of steps involved in designing the mechatronics process for a system in detail.	CO1	7 Marks
	b)	What are the major advantages of using Microprocessor based controllers? Explain with example.	CO1	7 Marks
		(OR)		
2		With a neat sketch explain the mechatronics application sequential controller.	CO4	14 Marks

UNIT-II

3	a)	Discuss the functional operation of an Electro-Pneumatic actuator with a neat sketch.	CO2	8 Marks
	b)	Explain about LVDT with a neat sketch.	CO2	6 Marks
		(OR)		
4		Discuss the following concepts in context of precision mechanical systems : i) 4-Quadrant servo drivers ii) Piezoelectric actuators.	CO2	14 Marks

UNIT-III

5	a)	Discuss about Discrete Fourier Transformations (DFT) used in signal processing.	CO3	8 Marks
	b)	Explain the function of solenoid valve with a neat sketch.	CO2	6 Marks
		(OR)		
6		Explain about any three types of filters used in signal conditioning process with neat sketches.	CO3	14 Marks

UNIT-IV

7	a)	Explain the working principle of DA convertor with a neat sketch. And discuss the-application.	CO3	9 Marks
	b)	Recognize the factors needed for selection of a micro controller.	CO3	5 Marks
		(OR)		
8		Demonstrate the architecture of 8051 micro controller with a neat sketch and discuss its applications	CO3	14 Marks

UNIT-V

9		Draw the architecture of PLC and explain each block in detail.	CO4	14 Marks
		(OR)		
10		With neat sketches explain the working of PID controller with its characteristics.	CO4	14 Marks

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CODE No.:14BT80304 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Regular Examinations April - 2019

PRODUCT DESIGN

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	List out various factors considering for a good design.	CO1	7 Marks
	b)	Explain the importance of design process.	CO1	7 Marks
		(OR)		
2	a)	Discuss in detail Concurrent Engineering concepts.	CO1	7 Marks
	b)	How the computer aided engineering concepts are used in good product design?	CO1	7 Marks

UNIT-II

3	a)	Distinguish between product design specifications and final specifications.	CO2	7 Marks
	b)	Explain in detail about information source.	CO2	7 Marks
		(OR)		
4	a)	Write the role of expert system in product design.	CO2	7 Marks
	b)	Discuss about copyright system in product design.	CO2	7 Marks

UNIT-III

5	a)	How the creativity and problem solving methods used in product development?	CO3	7 Marks
	b)	How the conceptual decomposition design procedures are incorporated in product design?	CO3	7 Marks
		(OR)		
6	a)	How the axiomatic design procedures are incorporated in product design?	CO3	7 Marks
	b)	Explain the concept of inventive problem solving in product design.	CO3	7 Marks

UNIT-IV

7	a)	Describe the effect of product architecture decision related to product planning and concept development decisions.	CO4	7 Marks
	b)	Illuminate in detail modeling and simulation for engineering design process.	CO4	7 Marks
		(OR)		
8	a)	Write a short note on industrial design and ergonomics.	CO4	7 Marks
	b)	Describe the configuration and parametric design concepts in detail.	CO4	7 Marks

UNIT-V

9	a)	List out various characteristics of design processes in relation to ethical issues.	CO5	7 Marks
	b)	Brief about moral responsibility and the trust relationship between engineers and society.	CO5	7 Marks
		(OR)		
10	a)	What kinds of ethical issues faced by engineers depend on design type and design hierarchy.	CO5	7 Marks
	b)	Distinguish between team building and group dynamics.	CO5	7 Marks

CODE No.:14BT80305 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Regular/Supplementary Examinations April - 2019

ADVANCED CASTING TECHNOLOGY

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain any one type of pattern making machine with neat sketch.	CO1	7 Marks
	b)	Discuss design considerations of risers in casting.	CO2	7 Marks
		(OR)		
2		Explain about the design requirements of the gating system with neat sketches.	CO2	14 Marks

UNIT-II

3	a)	Explain the elements of gating system and their function.	CO2	7 Marks
	b)	Discuss the types and functions of risers.	CO2	7 Marks
		(OR)		
4	a)	Explain the phenomenon of directional solidification.	CO2	7 Marks
	b)	Explain computer aided design for gating system.	CO2	7 Marks

UNIT-III

5	a)	With a neat sketch, explain the principle of indirect electric arc furnace.	CO3	7 Marks
	b)	Write short notes on the following: i) Chills ii) Chaplets	CO2	7 Marks
		(OR)		
6	a)	Discuss the different types of binders used in sand for making moulds and cores.	CO4	7 Marks
	b)	Write short notes on rotary furnaces.	CO3	7 Marks

UNIT-IV

7	a)	What are shell mold sands? Describe the properties, advantages and applications of these sands.	CO3	7 Marks
	b)	Explain any two types of conveying systems.	CO1	7 Marks
		(OR)		
8	a)	Describe the cold box method of core making.	CO3	7 Marks
	b)	Discuss about stack molding.	CO3	7 Marks

UNIT-V

9	a)	Explain various types of die casting processes.	CO3	10 Marks
	b)	Discuss the defects in centrifugal casting.	CO3	4 Marks
		(OR)		
10	a)	Explain various parameters of centrifugal casting.	CO3	9 Marks
	b)	State the applications of Investment casting.	CO3	5 Marks

CODE No.:14BT80306 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Regular/Supplementary Examinations April - 2019

QUALITY MANAGEMENT AND RELIABILITY

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Classify the "Costs of Quality (CoQ)" and briefly explain each one of them.	CO1	14 Marks
		(OR)		
2	a)	Enumerate the contributions of application of Kaizen.	CO1	7 Marks
	b)	List out and briefly explain the dimensions of quality.	CO1	7 Marks

UNIT-II

3		Briefly explain the seven tools of Quality Control.	CO2	14 Marks
		(OR)		
4		Following are the inspection results of magnets for nineteen observations. Calculate the average fraction defective and find out the control limits and construct a suitable control chart.	CO2	14 Marks

Week No.	No. Inspected	No. of Defective		Week No.	No. Inspected	No. of Defective
1	724	48		10	736	47
2	763	83		11	739	50
3	748	70		12	723	47
4	748	85		13	748	57
5	724	45		14	770	51
6	727	56		15	756	71
7	726	48		16	719	53
8	719	67		17	757	34
9	759	37		18	760	29

UNIT-III

5		Explain the procedures of single and double sampling plans with the help of flow charts. Mention their merits and demerits.	CO3	14 Marks
		(OR)		
6		A shipment of 2,000 portable battery units for microcomputers is about to be inspected by an importer. The manufacturer and the importer have set up a sampling plan in which the risk is limited to 5% at an acceptable quality level (AQL) of 2% defective, and the risk is set to 10% at Lot Tolerance Percent Defective (LTPD) = 7% defective. Construct an OC curve for the plan of **n** = 120 sample size and an acceptance level of **c** $\leq$ 3 defectives.	CO3	14 Marks

UNIT-IV

7	a)	Distinguish between MTBF and MTTF. For which types of equipment are they used?	CO4	8 Marks
	b)	Explain the significance of the term "Reliability Improvement Factor (RIF)"	CO4	6 Marks

(OR)

8		Three parallel pairs of components A and B, C and D, E and F are in series with reliabilities R_A, R_B, R_C, R_D, R_E, R_F respectively. Deduce the expression for the overall reliability of the system.	CO4	14 Marks

UNIT-V

9		Explain the basic elements of a fault tree analysis with neat sketch for each element.	CO5	14 Marks

(OR)

10		Write a short note on maintainability and system availability.	CO5	14 Marks

CODE No.:14BT80307 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Regular/Supplementary Examinations April - 2019

NON-CONVENTIONAL ENERGY SOURCES

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain basics of energy sources and Conservation.	CO1	7 Marks
	b)	Explain energy conservation opportunities.	CO1	7 Marks
		(OR)		
2	a)	Explain the estimation of monthly average, daily total radiation on horizontal surface.	CO2	7 Marks
	b)	Explain the working principle of Pyranometer with a neat sketch.	CO1	7 Marks

UNIT-II

3	a)	Mention the main components of a flat-plate collector, explain the function of each.	CO1	8 Marks
	b)	List the parameters affecting the performance of flat plate collectors and explain in detail.	CO2	6 Marks
		(OR)		
4	a)	Explain the principle of conversion of solar energy into heat.	CO1	4 Marks
	b)	Enumerate the different types of concentrating type collectors. Describe a collector used in power plant for generation of electrical Energy.	CO1	10 Marks

UNIT-III

5	a)	Illustrate the open cycle and closed cycle MHD power generation systems with neat sketch.	CO2	7 Marks
	b)	Discuss any three different types of solar Thermal Power plants in detail.	CO1	7 Marks
		(OR)		
6	a)	Explain the following: i) Seebeck Effect ii) Peltier Effect iii) Thompson Effect.	CO3	7 Marks
	b)	What is the impact of conventional energy sources on environment?	CO2	7 Marks

UNIT-IV

7	a)	Discuss the advantages and disadvantages of horizontal and vertical axis wind mill.	CO3	7 Marks
	b)	Describe the main applications of wind energy, giving neat sketches.	CO3	7 Marks
		(OR)		
8	a)	Explain the process of photosynthesis. What are the conditions, which are necessary for it?	CO3	8 Marks
	b)	Classify the gasifiers and explain in detail.	CO3	6 Marks

UNIT-V

9	a)	What are the advantages and disadvantages of wave energy?	CO2	7 Marks
	b)	Classify the types of Geo Thermal sources of energy, Explain in detail.	CO1	7 Marks

(OR)

10	a)	What are the different conversion technologies available in ocean thermal energy?	CO4	7 Marks
	b)	Discuss the modes of operation of a tidal power plant.	CO4	7 Marks

CODE No.:14BT80309 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Regular Examinations April - 2019

RAPID PROTOTYPE TECHNOLOGY

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss about prototype.	CO2	7 Marks
	b)	Classify RP systems.	CO1	7 Marks
		(OR)		
2	a)	Discuss about history of RP systems.	CO2	7 Marks
	b)	List the applications of Rapid prototyping.	CO1	7 Marks

UNIT-II

3	a)	Discuss about process parameters of Stereo Lithography Systems.	CO2	7 Marks
	b)	Discuss about the process parameters of Selective Laser Sintering.	CO2	7 Marks
		(OR)		
4	a)	Explain the working principle of Fusion Deposition Modeling.	CO2	7 Marks
	b)	List the applications of Selective Laser Sintering.	CO1	7 Marks

UNIT-III

5	a)	List the applications of Solid Ground Curing.	CO1	7 Marks
	b)	Discuss about Sander's Model market.	CO2	7 Marks
		(OR)		
6	a)	List the applications of Laminated Object Manufacturing.	CO1	7 Marks
	b)	Discuss about 3-D Printer.	CO2	7 Marks

UNIT-IV

7	a)	Discuss about Silicon Rubber Tooling in Indirect Rapid Tooling.	CO2	7 Marks
	b)	Discuss about Direct AIM process in Direct Rapid Tooling.	CO2	7 Marks
		(OR)		
8	a)	Discuss about Sand Casting Tooling in Direct Rapid Tooling.	CO2	7 Marks
	b)	Discuss about Spray MetalTooling in Indirect Rapid Tooling.	CO2	7 Marks

UNIT-V

9	a)	Discuss about the Factors influencing the accuracy in Rapid Prototyping.	CO2	7 Marks
	b)	Discuss about Vacuum Casting in Rapid Prototyping.	CO2	7 Marks
		(OR)		
10	a)	Discuss about the Part Building Errors in Rapid Prototyping.	CO2	7 Marks
	b)	Discuss about the STL files in Rapid Prototyping.	CO2	7 Marks

CODE No.:14BT80401 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Regular/Supplementary Examinations April - 2019

CELLULAR AND MOBILE COMMUNICATIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Justify that cellular concept improves the capacity of the system with a limited bandwidth.	CO1	7 Marks
	b)	Illustrate the micro cell zone concept in cellular systems.	CO1	7 Marks
		(OR)		
2	a)	What could be the possible sources of interference which may limit the performance cellular communication system?	CO2	7 Marks
	b)	Consider a cellular system with 1200 total available voice channels to handle the traffic. The area of each cell is 9 km^2 and the total coverage area of the system is 3600 km^2. Calculate the system capacity if the cluster size, N is 4.	CO4	7 Marks

UNIT-II

3	a)	What is co-channel interference? How it can be minimized? Explain.	CO1	7 Marks
	b)	Explain, How a specific antenna pattern reduces the co-channel?	CO1	7 Marks
		(OR)		
4	a)	Analyze the practical difficulties in the implementation of Hand-off and how these are addressed in different types of Hand-off strategies.	CO2	7 Marks
	b)	Brief out the architecture and the component of basic cellular system.	CO1	7 Marks

UNIT-III

5	a)	How interference is avoided in numbering and grouping the channels?	CO1	7 Marks
	b)	Compare the performance of omni cell and sectorized cells.	CO2	7 Marks
		(OR)		
6	a)	Why handoffs are necessary and describe its types?	CO2	7 Marks
	b)	What is a dropped call and how are these evaluated?	CO2	7 Marks

UNIT-IV

7	a)	Explain about block codes.	CO1	7 Marks
	b)	Define Hamming weight and Hamming distance. Find the Hamming weight and Hamming distance for code words 101001, 001010, 1001011.	CO4	7 Marks
		(OR)		
8		What is the difference between OFDM and FDM? Why OFDM technique is used? Explain in detail about transmission and reception an OFDM signal with neat block diagram.	CO2	14 Marks

UNIT-V

9	a)	Illustrate the distinction between hard and soft handoff. Why does soft handoff provide a performance improvement in CDMA systems?	CO1	7 Marks
	b)	Provide a diagram showing how a call is set up in IS-136. Explain.	CO2	7 Marks
		(OR)		
10	a)	Sketch forward control channel block diagrams for IS-95.	CO1	7 Marks
	b)	Compare TDMA and CDMA schemes, identifying the advantages of	CO1	7 Marks

each scheme over the other.

CODE No.:14BT80402 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Regular/Supplementary Examinations April - 2019

MIXED SIGNAL DESIGN

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the operation of first order switched capacitor integrator.	CO1	7 Marks
	b)	Explain charge injection effects in switched capacitor.	CO1	7 Marks
		(OR)		
2	a)	Discuss in detail about switch sharing.	CO1	8 Marks
	b)	Explain the concept of Bi-quad filters.	CO1	6 Marks

UNIT-II

3	a)	Draw the circuit of linear model Type I PLL and derive its transfer function?	CO2	7 Marks
	b)	Write short notes on the concepts of frequency synthesis and skew reduction?	CO1	7 Marks
		(OR)		
4	a)	Explain in detail about frequency multiplication and jitter reduction concepts?	CO1	7 Marks
	b)	What is jitter and explain the use of jitters in PLL?	CO1	7 Marks

UNIT-III

5	a)	Analyse $V_{Q(rms)}$ of a ramp input signal for D/A Converter through Deterministic Approach.	CO2	7 Marks
	b)	Discuss ideal A/D Converter using necessary block diagrams.	CO2	7 Marks
		(OR)		
6	a)	Discuss Noise Quantization using Stochastic approach.	CO3	7 Marks
	b)	Discuss the following D/A converters: i) Reduced -Resistance -Ratio Ladder ii) R-2R Based Converters.	CO3	7 Marks

UNIT-IV

7	a)	Write short notes on 3-bit parallel converter and discuss the issues in designing parallel A/D converters?	CO1	7 Marks
	b)	Explain 8-bit two step A/D converter with a neat sketch.	CO1	7 Marks
		(OR)		
8	a)	Explain the operation of the successive approximation approach with a flow graph.	CO1	7 Marks
	b)	Mention all kinds of medium speed and high speed ADC and explain the operation of a 4-bit interpolating A/D converter.	CO3	7 Marks

UNIT-V

9	a)	Explain the system architecture of delta-sigma A/D converter with neat block diagram briefly.	CO1	7 Marks
	b)	Draw and explain i) the general error feedback structure of general $\Delta\sum$ modulator ii) the error feedback structure of a second order $\Delta\sum$ modulator	CO2	7 Marks
		(OR)		
10	a)	Explain the system architecture of delta-sigma D/A converters with neat block diagram of a 1- bit oversampling D/A converter.	CO1	7 Marks
	b)	Compare delta sigma modulator with multi-bit quantizer.	CO2	7 Marks

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CODE No.:14BT80403 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Regular/Supplementary Examinations April - 2019

SATELLITE COMMUNICATIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Compare the advantages and disadvantages of different frequency bands used in satellite communication considering the effects of propagation media.	CO1	10 Marks
	b)	Why uplink frequency is higher than downlink frequency? Justify.	CO1	4 Marks
		(OR)		
2	a)	Design satellite transponder and discuss the types of transponders in satellites with neat sketch.	CO3	10 Marks
	b)	Mention various types of satellite orbits, discuss their merits and demerits.	CO1	4 Marks

UNIT-II

3	a)	Explain in detail about the tracking, telemetry and command subsystem with neat block diagram.	CO1	7 Marks
	b)	A satellite at a distance of 40,000 km from a point on the earth's surface radiates a power of 10W from an antenna with a gain of 17 dB in the direction of the observer. Find the flux density at the receiving point, and the power received by antenna at this point with an effective area of $10m^2$.	CO3	7 Marks
		(OR)		
4	a)	Explain in detail about 6/4 GHz communication satellite sub system.	CO1	7 Marks
	b)	Low earth orbit satellites use mainly L band, with ranges varying from 1000 to 2500 km. Calculate the maximum and minimum path loss from earth to a satellite, in dB, for the uplink frequency of 1.6 GHz, and the downlink frequency of 1.6 GHz, and the downlink frequency of 1.5 GHz.	CO3	7 Marks

UNIT-III

5	a)	Explain inter modulation in FDMA with example.	CO3	7 Marks
	b)	Explain in detail about Terrestrial Interface.	CO1	7 Marks
		(OR)		
6	a)	A TDMA system operates at 100M bits/s with a 2ms frame time. Assume that all slots are of equal length and that a guard time of 1μs is required between slots. Compute the efficiency of the communication resource (CR) for the case of 1, 2, 5, 10 slots per frame.	CO1	7 Marks
	b)	A DS-SS CDMA system has a number of earth stations sharing a single 54 MHz bandwidth Ka-Band transponder. Each station has a different 1023 bit PN sequence which is used to spread the traffic bits into a bandwidth of 45 MHz. The transmitters and receivers use RRC filters with $\alpha = 0.5$ and the chip rate is 30Mcps. Determine the number of earth stations that can be supported by the CDMA system if the correlated output S/N=12dB.	CO2	7 Marks

UNIT-IV

7	a)	Compare the various NGSO constellation designs used in satellite communications.	CO2	8 Marks
	b)	Write relation between noise figure and system noise temperature.	CO1	6 Marks
		(OR)		
8	a)	Define satellite stabilization? Explain the importance of stabilization. Make a comparative study between spin stabilization and three axes body stabilization.	CO1	8 Marks
	b)	Explain in detail about launches and launch vehicles.	CO1	6 Marks

UNIT-V

9	a)	Explain GPS Position location Principles and their operation in satellite navigation.	CO1	7 Marks
	b)	Describe the process of GPS receiver operation.	CO1	7 Marks
		(OR)		
10	a)	Discuss about the following i) GPS Navigation Message ii) GPS Signal Levels	CO1	7 Marks
	b)	Explain GPS Receivers and Codes with suitable sketches.	CO4	7 Marks

CODE No.:14BT80404 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Regular/Supplementary Examinations April - 2019

LOW POWER CMOS VLSI DESIGN

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Illustrate the needs for low power VLSI chips.	CO1	7 Marks
	b)	A 32 bit off chip bus operating at 5V and 6MHz clock rate is driving a capacitance of 25Pf/bit. Each bit is estimated to have a toggling probability of 0.25 at each clock cycle. What is the power dissipation in operating the bus?	CO2	7 Marks
		(OR)		
2	a)	Discuss the important points about short circuit current of an inverter.	CO1	7 Marks
	b)	Explain the operation of Pseudo NMOS NOR gate.	CO1	7 Marks

UNIT-II

3	a)	Where do we require Monte Carlo simulation? Explain in detail.	CO2	7 Marks
	b)	Compute the transition density and static probability of $\mathbf{Y = AB + C}$ given $\boldsymbol{P(a) = 0.2, P(b) = 0.3, P(c) = 0.4, D(a) = 1, D(b) = 2, D(c) = 3}$.	CO3	7 Marks
		(OR)		
4	a)	Explain about probabilistic power analysis techniques.	CO1	7 Marks
	b)	Compute the transition density and static probability of $\mathbf{Y = A + B + C}$ given $\boldsymbol{P(a) = 0.2, P(b) = 0.3, P(c) = 0.4, D(a) = 1, D(b) = 3, D(c) = 5}$.	CO3	7 Marks

UNIT-III

5	a)	How to characterize a logic signal?	CO2	7 Marks
	b)	Give the relation between conditional probability and frequency.	CO2	7 Marks
		(OR)		
6	a)	What is the impact of transistor sizing on speed?	CO1	7 Marks
	b)	Elaborate on self gating flip flops.	CO2	7 Marks

UNIT-IV

7	a)	How to optimize the power reduction of clock signals using clock gating approach. Explain	CO2	6 Marks
	b)	Draw basic architecture and signaling scheme of the bus. Implement bus driver and receiver to achieve low power in a bus using low voltage swing.	CO1	8 Marks
		(OR)		
8	a)	Write short notes on: i) Bus architecture and bus signals of charge recycling bus. ii) Driver circuit implementation of charge recycling bus. iii) Receiver circuit of the charge recycling bus. iv) Time multiplexed charge recycling bus.	CO1	8 Marks
	b)	Illustrate the glitch problem in designing low power parallel multiplier with neat sketches.	CO2	6 Marks

UNIT-V

9	a)	Explain about asynchronous data processing system.	CO2	7 Marks
	b)	Explain about adaptive filtering technique.	CO2	7 Marks
		(OR)		
10	a)	What is the significance of parallelism? Explain, How power efficiency takes place in a pipelined system?	CO2	7 Marks
	b)	With a suitable example explain about loop unrolling transformation.	CO1	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Regular/Supplementary Examinations April - 2019

DESIGN PATTERNS

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss about the catalogue of design patterns.	CO1	7 Marks
	b)	List out the causes for redesign in a project.	CO1	7 Marks
		(OR)		
2	a)	How to select a design pattern for a particular problem.	CO1	7 Marks
	b)	What is a design pattern? Sketch the various components to be considered in the design pattern.	CO4	7 Marks

UNIT-II

3		What is a creational pattern? Discuss about Factory method in detail.	CO1	14 Marks
		(OR)		
4	a)	Discuss about various applications of creational pattern.	CO2	7 Marks
	b)	Briefly discuss about Prototype design pattern.	CO2	7 Marks

UNIT-III

5	a)	List out intent, applicability and motivation of Bridge pattern.	CO2	7 Marks
	b)	Discuss about the Facade pattern with its intent and architecture.	CO4	7 Marks
		(OR)		
6	a)	Discuss about Flyweight pattern with its consequences and implementation issues?	CO1	9 Marks
	b)	What are applications of Proxy pattern?	CO4	5 Marks

UNIT-IV

7	a)	Discuss behavioral pattern and give some example code of chain of responsibility design pattern.	CO3	7 Marks
	b)	Discuss about Interpreter design pattern.	CO2	7 Marks
		(OR)		
8	a)	Describe sample code of visitor design pattern.	CO3	7 Marks
	b)	Explain the collaboration and consequences of Command pattern.	CO4	7 Marks

UNIT-V

9		Explain document editor for supporting multiple look-and-feel standards and multiple window systems.	CO1	14 Marks
		(OR)		
10		Illustrate with an example on Class, Sequence and Interaction diagrams.	CO2	14 Marks

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CODE No.:14BT80502 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Regular/Supplementary Examinations April - 2019

BIG DATA

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is Big data? Explain Four V's of Big Data.	CO1	7 Marks
	b)	What is standardizing data? Explain different standardization procedures.	CO1	7 Marks
		(OR)		
2	a)	Write down the importance and the applications of Big Data.	CO1	7 Marks
	b)	Distinguish between Univariate and Multivariate outliers.	CO2	7 Marks

UNIT-II

3		Draw and explain HDFS Architecture. Explain the function of Name Node and Data Node. What is a Secondary Name node? Is it a substitute to the Name node?	CO2	14 Marks
		(OR)		
4		Explain following commands of HDFS with syntax and at least one example of each. i) get; ii) cp; iii) chown.	CO2	14 Marks

UNIT-III

5		Illustrate Anatomy of Map Reduce with neat sketch.	CO1	14 Marks
		(OR)		
6	a)	Explain Failures in Map Reduce.	CO1	7 Marks
	b)	Differentiate Map reduce 1.0 and 2.0.	CO1	7 Marks

UNIT-IV

7		Explain in detail about the Hive data manipulation, queries, data definition and data types.	CO2	14 Marks
		(OR)		
8	a)	Explain the architecture of a pig with a neat sketch.	CO2	7 Marks
	b)	Explain about the various data types supported by HIVEQL with an example.	CO2	7 Marks

UNIT-V

9	a)	Briefly discuss Mahout and Sqoop functionalities.	CO1	7 Marks
	b)	Explain Link Inversion in Nutch.	CO1	7 Marks
		(OR)		
10		Explain Log Processing at Rack space with neat sketch	CO1	14 Marks

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CODE No.:14BT80532 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Regular/Supplementary Examinations April - 2019

AD-HOC AND WIRELESS SENSOR NETWORKS

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain in detail about wireless sensor networks.	CO1	7 Marks
	b)	Describe the security threats in adhoc wireless network.	CO1	7 Marks
		(OR)		
2	a)	Discuss the major issues in designing a MAC protocol.	CO2	7 Marks
	b)	With a neat sketch explain multiple access collision avoidance protocol.	CO1	7 Marks

UNIT-II

3		Compare and contrast various on-demand routing protocols with the help of one example.	CO2	14 Marks
		(OR)		
4	a)	Discuss about hierarchical state routing protocol with one example.	CO2	7 Marks
	b)	Discuss about various hybrid routing protocols.	CO3	7 Marks

UNIT-III

5	a)	Compare various TCP solutions for ad-hoc wireless networks.	CO2	7 Marks
	b)	Discuss design goals of a transport layer protocol for ad-hoc wireless networks.	CO2	7 Marks
		(OR)		
6	a)	Discuss the effects of multiple breaks on a single path at the TCP-F sender with one example.	CO1	7 Marks
	b)	Explain the importance of feedback-based TCP in ad-hoc wireless networks.	CO1	7 Marks

UNIT-IV

7		Explain in detail various QoS solutions of MAC layer.	CO1	14 Marks
		(OR)		
8		Explain in detail Processor Power Management Schemes.	CO1	14 Marks

UNIT-V

9	a)	List out the design issues of MAC protocols for WSNs.	CO3	7 Marks
	b)	Describe about Energy consumption in wireless sensor networks.	CO2	7 Marks
		(OR)		
10	a)	Illustrate the various challenges in designing the wireless sensor networks.	CO4	7 Marks
	b)	Explain any four applications of wireless sensor networks.	CO1	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Regular/Supplementary Examinations April - 2019

FIBER OPTICS AND LASER INSTRUMENTATION

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss different types of fibers and their properties with neat sketches. Also derive the expressions for NA in all types of fibers and explain their significance.	CO1	9 Marks
	b)	The numerical input/output mean optical power ratio in 1Km length of optical fiber is found to be 2.5. Calculate the received mean optical power when a mean optical power of 1mW is launched into a 5Km length of the fiber (assuming no joints or connectors).	CO2	5 Marks
		(OR)		
2	a)	What are homojunctions and heterojunctions? Discuss unique properties of the *P-n-N* double heterostructure LED and sketch (with proper labeling) the energy-level diagram of such a configuration.	CO1	7 Marks
	b)	Illustrate the principle and operation of Reach through Avalanche Photo Diode (RAPD).	CO1	7 Marks

UNIT-II

3	a)	Explain the working principle of semiconductor laser with a neat diagram.	CO1	7 Marks
	b)	Explain the method for the measurement of acceleration and current.	CO1	7 Marks
		(OR)		
4	a)	Explain the method for the measurement of liquid level and strain.	CO1	7 Marks
	b)	Write a short note on ring laser gyroscope.	CO1	7 Marks

UNIT-III

5	a)	What is meant by population inversion? How it can be achieved in lasers.	CO1	7 Marks
	b)	Explain the advantage of four energy level over the three level system in lasers.	CO1	7 Marks
		(OR)		
6	a)	What is meant by Q – switching? Explain the methods of Q - switching in lasers.	CO1	7 Marks
	b)	A 1000-Watt CO_2 laser beam with a beam divergence angle of 10^{-2} radians is focussed by a 1-cm-focal-length lens. Find the power per unit area in the focal spot. Compare and comment on this value with a mercury arc lamp that emits 1000 Watts of power uniformly into a solid angle of 4π steradians and focussed with the same lens.	CO2	7 Marks

UNIT-IV

7	a)	Explain the application of lasers in melting and trimming of materials.	CO1	7 Marks

	b)	What are the requirements of laser instruments for surgery? and what are the areas of medical laser surgery?	CO1	7 Marks
		(OR)		
8	a)	Explain laser heating of materials with the merits over conventional methods.	CO1	7 Marks
	b)	Write about the light propagation through a tissue. Explain the use of lasers in endoscopy.	CO1	7 Marks

UNIT-V

9	a)	Describe the different types of Holographic Interferometry.	CO1	7 Marks
	b)	What are the uses of Electro-optic modulators?	CO1	7 Marks
		(OR)		
10	a)	Describe with theory the working principle of Acousto-optic modulator.	CO1	7 Marks
	b)	What are the engineering and scientific uses of Holography?	CO1	7 Marks

CODE No.:14BT81002 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Regular/Supplementary Examinations April - 2019

POWER PLANT INSTRUMENTATION

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Explain how the power is generated in a thermal power plant with a neat schematic diagram. Mention all the elements and variables in a plant. Also mention the merits and demerits of thermal power plant.	CO1	14 Marks
		(OR)		
2		What is the importance of solar power in the present energy crisis in the world? Describe the basic principle and operation of solar PV system with neat diagram and list out its merits over solar thermal system.	CO1	14 Marks

UNIT-II

3	a)	Distinguish between water side and steam side Temperature control.	CO1	5 Marks
	b)	Explain Gas holder Level Measurement in air fuel circuit with a neat sketch.	CO1	9 Marks
		(OR)		
4	a)	List out different methods of superheated steam temperature control.	CO1	5 Marks
	b)	How is the steam bus pressure measured and controlled?	CO1	9 Marks

UNIT-III

5		Explain a combustion control system with air-fuel parallel operation and cross limited providing air and fuel limiting facilities for safety operations.	CO2	14 Marks
		(OR)		
6	a)	Distinguish between two element drum level control and three element drum level control.	CO2	7 Marks
	b)	Explain cascade steam temperature control with a neat sketch.	CO2	7 Marks

UNIT-IV

7	a)	Enumerate the essential steam turbine parameters that should be monitored and controlled.	CO1	7 Marks
	b)	Explain in detail the monitoring and control of turbine speed.	CO1	7 Marks
		(OR)		
8	a)	Draw the control schematics for the control of pressure, fuel, and tank level in lobe oil system.	CO1	7 Marks
	b)	Explain the different cooling methods for an electric generator. Why hydrogen cooling is preferred others for large generators?	CO1	7 Marks

UNIT-V

9		Briefly explain about types of maintenance in a power plant.	CO1	14 Marks
		(OR)		
10		Write a short note on intrinsic and electrical safety.	CO1	14 Marks

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CODE No.:14BT81004 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Regular/Supplementary Examinations April - 2019

AIRCRAFT INSTRUMENTATION

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss about electronic attitude director indicator.	CO1	7 Marks
	b)	Explain about modern aircraft system.	CO1	7 Marks
		(OR)		
2	a)	Explain about horizontal situation indicator.	CO1	7 Marks
	b)	With the help of diagram explain the secondary control surfaces in aircraft.	CO1	7 Marks

UNIT-II

3		How do you measure the aircraft speed accurately? Explain in detail with diagram.	CO1	14 Marks
		(OR)		
4		Explain the location of combined probe and static ports.	CO1	14 Marks

UNIT-III

5		List the different gyroscopes used in aircraft and compare the RLG and FOG gyroscopes.	CO1	14 Marks
		(OR)		
6		Explain about gyro-stabilized direction indicating systems.	CO1	14 Marks

UNIT-IV

7		What is the basic principle of optical tachometer? Explain the procedure for speed measurement of aircraft engine by using opto-tachometer.	CO1	14 Marks
		(OR)		
8	a)	Write short notes on engine fuel quantity indicator.	CO1	7 Marks
	b)	Explain the operation and working of vane flow meter.	CO2	7 Marks

UNIT-V

9		Describe mode selector panel/mode controller with neat sketch.	CO1	14 Marks
		(OR)		
10		Explain about annunciator display panel and active matrix liquid crystal display units.	CO1	14 Marks

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CODE No.:14BT81006 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Regular/Supplementary Examinations April - 2019

INSTRUMENTATION IN PROCESS INDUSTRIES

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are sanitary conditions in food industries? Explain with help of hardware.	CO1	7 Marks
	b)	Which type of controllers and displays are used in food industries? Explain any one in detail.	CO1	7 Marks
		(OR)		
2		Describe the condition for consistency for liquids, Explain about sensors in food industries with sketch.	CO1	14 Marks

UNIT-II

3		What are the raw materials for paper industries? Explain the pulping process with block diagram.	CO1	14 Marks
		(OR)		
4		Identify suitable electrical methods for measurement of thickness, length and weight of the paper, explain it with a neat sketch	CO1	14 Marks

UNIT-III

5	a)	Explain the role of computer controller in pharmaceutical industries with block diagram.	CO1	7 Marks
	b)	Describe the process of the pharmaceutical industries in detail with neat diagram.	CO1	7 Marks
		(OR)		
6		How the controllers are helpful for the mixing of drugs in pharmaceutical industries? Explain in detail.	CO1	14 Marks

UNIT-IV

7		Describe any two important processes involved in making of steel.	CO1	14 Marks
		(OR)		
8		Explain in detail about blast furnace stove combustion control center with a neat flow diagram.	CO1	14 Marks

UNIT-V

9	a)	Explain the control operation of chemical reactors.	CO1	7 Marks
	b)	Describe the compressor and explain control operation of it.	CO1	7 Marks
		(OR)		
10		What is the role of distillation columns in petrochemical industries? Explain in detail.	CO1	14 Marks

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CODE No.:14BT81201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Regular/Supplementary Examinations April - 2019

CLOUD COMPUTING

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write about the Brief History of Cloud Computing.	CO1	7 Marks
	b)	Discuss about IT-Resource, On-Premise.	CO1	4 Marks
	c)	Describe the Cloud Consumers and Cloud Providers.	CO2	3 Marks
		(OR)		
2	a)	Explain Roles of cloud service owner and resource administrator.	CO1	7 Marks
	b)	Compare the Cloud Delivery Models.	CO2	7 Marks

UNIT-II

3	a)	Write about Broadband Networks and internet architecture.	CO1	7 Marks
	b)	Identify the need of Multitenant Technology and explain with an example.	CO1	7 Marks
		(OR)		
4	a)	Describe the Workload Distribution and Resource pooling.	CO2	7 Marks
	b)	Distinguish between Dynamic scalability and Elastic Resource Capacity.	CO1	7 Marks

UNIT-III

5	a)	What is a Bare-metal Provisioning? Discuss the Bare-metal Provisioning components.	CO1	7 Marks
	b)	Discuss the Dynamic failure and recovery architecture.	CO1	7 Marks
		(OR)		
6	a)	Briefly discuss the direct LUN Access architecture.	CO1	7 Marks
	b)	Explain in detail, Load Balanced Virtual Switch architecture.	CO1	7 Marks

UNIT-IV

7		Describe Service Models in detail with suitable examples.	CO2	14 Marks
		(OR)		
8	a)	Discuss about Cost management Considerations in Cloud.	CO1	7 Marks
	b)	List and explain Cloud Usage cost Metrics.	CO1	7 Marks

UNIT-V

9	a)	Discuss about the History of Virtualization.	CO1	7 Marks
	b)	List the objective of Virtualization.	CO1	7 Marks
		(OR)		
10		Describe in-detail about VMware Technology installation and working procedure.	CO1	14 Marks

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CODE No.:14BT81202 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Regular/Supplementary Examinations April - 2019

CRYPTOGRAPHY AND NETWORK SECURITY

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Distinguish between passive attacks and active attacks.	CO1	7 Marks
	b)	Discuss about various security services.	CO1	7 Marks
		(OR)		
2	a)	Illustrate with an example on each of the Ceasar Cipher and Playfair Cipher.	CO1	8 Marks
	b)	Briefly explain Transposition technique.	CO2	6 Marks

UNIT-II

3	a)	Describe the mechanism on how Public-Key Cryptosystem solves the problem with the symmetric encryption.	CO1	7 Marks
	b)	Discuss about RSA Algorithm.	CO1	7 Marks
		(OR)		
4	a)	Briefly explain Block Cipher Principles.	CO1	6 Marks
	b)	Users A and B use the Diffie-Hellman key exchange technique with a common prime q = 71 and a primitive root α = 7. i) If user A has private key XA = 5, what is A's public key YA? ii) If user B has private key XB = 12, what is B's public key YB? iii) What is the shared secret key?	CO2	8 Marks

UNIT-III

5	a)	List out the functions used to produce an authenticator.	CO1	4 Marks
	b)	Describe various ways in which hash code can be used to provide message authentication.	CO1	10 Marks
		(OR)		
6	a)	Discuss about HMAC objectives and its algorithm.	CO1	7 Marks
	b)	Briefly explain the need of Kerberos and list out its versions.	CO1	7 Marks

UNIT-IV

7	a)	Draw the general format of PGP messages. Explain each field.	CO1	6 Marks
	b)	Describe the process of message generation and message reception of PGP.	CO1	8 Marks
		(OR)		
8	a)	Differentiate between IPSec transport and tunnel modes.	CO1	6 Marks
	b)	Draw the IPSec AH and ESP formats.	CO1	8 Marks

UNIT-V

9	a)	Define Intruder. List and explain various intrusion detection techniques.	CO2	9 Marks
	b)	Describe how password is protected in UNIX.	CO1	5 Marks
		(OR)		
10	a)	Explain the working of packet filer router and application level gateway.	CO1	6 Marks
	b)	Give brief overview of Trusted Systems.	CO1	8 Marks

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CODE No.:14BT81202 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Regular/Supplementary Examinations April - 2019

CRYPTOGRAPHY AND NETWORK SECURITY

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is the difference between a monoalphabetic cipher and a polyalphabetic cipher?	CO1	7 Marks
	b)	i) Apply Columnar transposition for the following plain text "THISCOURSEOFIASWILLHELPYOUTOSHARPEN" using encryption Key "6 4 3 5 1 7 2" ii) Encrypt the plain text "THISCOURSE" using rail fence technique of length '3'.	CO1	7 Marks
		(OR)		
2	a)	What is the difference between an unconditionally secure cipher and a computationally secure cipher?	CO1	7 Marks
	b)	Calculate Decryption Key for the following Encryption key and produce cipher text for the given plain text "OK" using Hill Cipher $\begin{bmatrix} 9 & 4 \\ 5 & 7 \end{bmatrix}$.	CO1	7 Marks

UNIT-II

3		With neat sketches explain block cipher modes of operation.	CO1	14 Marks
		(OR)		
4	a)	Draw and explain single round of DES algorithm.	CO1	7 Marks
	b)	Describe the requirements, applications and cryptanalysis of public key crypto systems.	CO2	7 Marks

UNIT-III

5	a)	Outline Hash function based on Cipher block Chaining Mode (CBC).	CO1	7 Marks
	b)	Outline basic uses of Message Encryption of MAC.	CO1	7 Marks
		(OR)		
6	a)	List the properties of Digital Signature.	CO1	7 Marks
	b)	Illustrate X.509 public-key certificates with neat diagram.	CO1	7 Marks

UNIT-IV

7		List and define SET participants. Explain the transactions- Purchase request, payment authorization and payment capture in detail.	CO1	14 Marks
		(OR)		
8	a)	Explain the functionality of S/MIME.	CO1	7 Marks
	b)	Differentiae transport and tunnel modes of IPSec ESP service.	CO1	7 Marks

UNIT-V

9	a)	Discuss about various approaches of intrusion detection.	CO1	7 Marks
	b)	Discuss about various password selection strategies.	CO1	7 Marks
		(OR)		
10	a)	Elaborate different virus countermeasures for prevention of viruses	CO1	7 Marks
	b)	Describe various firewall design principles.	CO1	7 Marks

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CODE No.:14BT81203 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Regular/Supplementary Examinations April - 2019

.NET TECHNOLOGIES

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe the architecture of .NET Framework with neat diagram.	CO1	7 Marks
	b)	Discuss how to process command line arguments in C# with example program.	CO3	7 Marks
		(OR)		
2	a)	Discuss the **System.Console** class with members.	CO1	4 Marks
	b)	Discuss various data types in C#.	CO1	10 Marks

UNIT-II

3	a)	Illustrate with an example how exception handling mechanism can be helpful for handling the exceptions in C#.	CO3	7 Marks
	b)	Define Constructor. Write a C# program for evaluating the expression $4x^2 + 3y + z$ using parameterized constructor.	CO3	7 Marks
		(OR)		
4	a)	Compare and contrast System Level Exceptions and Application Level Exceptions.	CO1	7 Marks
	b)	Develop a C# program that implements Linear Search using arrays.	CO3	7 Marks

UNIT-III

5	a)	Discuss various types of interfaces. What happens if the inherited interfaces having conflicting method names?	CO1	7 Marks
	b)	Illustrate the way of creating custom generic methods in C#.	CO3	7 Marks
		(OR)		
6	a)	Illustrate the process of overloading of binary operators.	CO3	7 Marks
	b)	How do you create custom generic Class in C#?	CO2	7 Marks

UNIT-IV

7	a)	Describe the disconnected data Architecture implemented in C# with suitable example.	CO1	7 Marks
	b)	Define Dataset. Illustrate Dataset with suitable example.	CO1	7 Marks
		(OR)		
8	a)	Differentiate between DataReader and Dataset.	CO1	7 Marks
	b)	Design a Sign-up Registration form with Username, Password and email ID and insert the data into Registration table.	CO2	7 Marks

UNIT-V

9	a)	Discuss the process of building an ASP.NET webpage using code files.	CO3	7 Marks
	b)	Illustrate the way of dynamically adding and removing controls.	CO2	7 Marks
		(OR)		
10	a)	Discuss the role of **web.config** file.	CO1	7 Marks
	b)	Describe the nature of web controls.	CO1	7 Marks

CODE No.:14BT81204 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Regular/Supplementary Examinations April - 2019

INFORMATION RETRIEVAL SYTEMS

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain various types of Information Retrieval Systems.	CO1	7 Marks
	b)	How Digital Libraries can be used as Informationbase Systems?	CO2	7 Marks
		(OR)		
2	a)	Describe the functional overview of Information Retrieval System.	CO1	7 Marks
	b)	What is the need of Information retrieval systems and what are its objectives?	CO2	7 Marks

UNIT-II

3	a)	Compare advantages and disadvantages of Porter Stemming algorithm, Dictionary Stemming algorithm and Success Variety Stemming algorithm.	CO2	7 Marks
	b)	What is Indexing? Explain Manual Indexing process.	CO1	7 Marks
		(OR)		
4	a)	Write short notes on: i) Categorization; ii) Citation Metadata.	CO1	7 Marks
	b)	Briefly discuss the automatic Indexing of multimedia items.	CO1	7 Marks

UNIT-III

5	a)	Explain the process involved in Term clustering.	CO1	8 Marks
	b)	Write short notes on Thesaurus.	CO2	6 Marks
		(OR)		
6	a)	Explain the similarity measures that can be used in user search techniques.	CO1	9 Marks
	b)	Briefly describe the concept of ranking.	CO2	5 Marks

UNIT-IV

7	a)	What is a text summarization process? Explain differences between automatic and human - based text summarization.	CO2	7 Marks
	b)	Discuss the Timeline presentation with **Google** time line capability.	CO1	7 Marks
		(OR)		
8	a)	How to use Collaborative Filter Page Ranking algorithm in **Google** search system explain.	CO1	7 Marks
	b)	What is Passive Filtering? Explain different types of Collaborative Filtering.	CO1	7 Marks

UNIT-V

9	a)	Explain the Boyer-Moore text search algorithm with an example.	CO1	8 Marks
	b)	How the information system is evaluated? What are the measures used in it?	CO2	6 Marks
		(OR)		
10	a)	What are TREC results? How it can be used in information system evaluation?	CO3	7 Marks
	b)	What algorithmic basis is used for the GESCAN and Fast Data Finder hardware text search machines?	CO3	7 Marks

CODE No.:14BT81501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Regular/Supplementary Examinations April - 2019

HIGH PERFORMANCE COMPUTING

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe the Stored Program Computer Architecture with neat sketch.	CO1	7 Marks
	b)	Explain in detail about cache mapping.	CO1	7 Marks
		(OR)		
2	a)	Discuss in detail Multi-threaded processors.	CO1	7 Marks
	b)	Explain the design principles of Vector processors.	CO1	7 Marks

UNIT-II

3		Describe the role of compilers in Optimization.	CO1	14 Marks
		(OR)		
4	a)	Write a short note on Dynamic Memory management.	CO1	7 Marks
	b)	Write about Storage Order.	CO1	7 Marks

UNIT-III

5		Illustrate Cache Coherence Problem. Design a UMA shared memory Computer.	CO2	14 Marks
		(OR)		
6	a)	Differentiate data parallelism and functional parallelism.	CO1	7 Marks
	b)	Describe Mesh Networks.	CO1	7 Marks

UNIT-IV

7	a)	List the Scalability metrics and Explain in detail.	CO1	7 Marks
	b)	Explain in brief Parallel Sparse matrix-Vector multiply.	CO2	7 Marks
		(OR)		
8	a)	Discuss the loop scheduling through OpenMP.	CO3	7 Marks
	b)	Illustrate the Profiling OpenMP programs.	CO3	7 Marks

UNIT-V

9	a)	Explain MPI Parallelization of Jacobi Server with neat sketch.	CO2	7 Marks
	b)	Write short note on Reducing communication overhead.	CO3	7 Marks
		(OR)		
10	a)	Write a program for Parallel Integration in MPI.	CO2	7 Marks
	b)	Describe about Network Contention in detail.	CO3	7 Marks

CODE No.:14BT81503 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Regular/Supplementary Examinations April - 2019

HUMAN COMPUTER INTERACTION

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Define User Interface. Give a detailed note about user interface design.	CO1	14 Marks
		(OR)		
2	a)	Distinguish between direct and indirect manipulation.	CO2	7 Marks
	b)	Describe the characteristics of web interface.	CO1	7 Marks

UNIT-II

3		List and explain various human characteristics that influence on interface and screed design.	CO2	14 Marks
		(OR)		
4	a)	Summarize the speed at which people can perform using various communication methods: Reading, Listening and Speaking.	CO2	7 Marks
	b)	List and explain psychological responses to poor design.	CO2	7 Marks

UNIT-III

5	a)	List and write different design goals of screen design.	CO1	7 Marks
	b)	Why is context important in selecting and applying guidelines and principles for screen design?	CO1	7 Marks
		(OR)		
6	a)	Analyze the emphasis of Screen Navigation and its flow of screen design.	CO1	7 Marks
	b)	Examine different technological considerations in interface design.	CO1	7 Marks

UNIT-IV

7	a)	Define Window and Explain various characteristics of Windows.	CO1	5 Marks
	b)	Explain various Operable controls that permit the entry, selection, changing, or editing of a particular value, or cause a command to be performed.	CO1	9 Marks
		(OR)		
8	a)	Explain the advantages of using icons. Illustrate the kind of icons used to reflect objects and actions.	CO1	7 Marks
	b)	Explain various factors that influence an icon's usability.	CO1	7 Marks

UNIT-V

9	a)	Outline the factors among user interface building tools.	CO2	7 Marks
	b)	Briefly explain about various pointing devices used for interaction tasks.	CO1	7 Marks
		(OR)		
10	a)	How to construct more robust systems using software engineering tools?	CO2	7 Marks
	b)	Explain about continuous speech recognition.	CO1	7 Marks

CODE No.:14BT5HS02 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2019

MANAGEMENT SCIENCE

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is management? Explain its nature and importance in detail.	CO1	7 Marks
	b)	Discuss the contributions of F.W.Taylor to the management.	CO1	7 Marks
		(OR)		
2	a)	Explain about systems approach to management with suitable examples.	CO1	7 Marks
	b)	Write about procedure and principles of organization.	CO1	7 Marks

UNIT-II

3	a)	What is forecasting? Explain any two forecasting methods with examples.	CO4	7 Marks
	b)	Explain about different channels of distribution.	CO1	7 Marks
		(OR)		
4	a)	Define inventory. Discuss the different types of inventory.	CO2	7 Marks
	b)	Discuss about quality control using control charts with an example.	CO2	7 Marks

UNIT-III

5	a)	Define employee motivation. Explain Herzberg's two-factor theory.	CO3	7 Marks
	b)	Classify various methods used for Job evaluation and list advantages and limitations.	CO5	7 Marks
		(OR)		
6		State the difference between need and want. Describe Maslow's theory of human needs.	CO1	14 Marks

UNIT-IV

7	a)	Write and explain about entrepreneurial traits.	CO4	7 Marks
	b)	Explain the role of entrepreneurship in economic development.	CO4	7 Marks
		(OR)		
8		The following table shows the jobs of network along with their time estimates.	CO2	14 Marks

Job	1-2	1-6	2-3	2-4	3-5	4-5	6-7	5-8	7-8
a (days)	1	2	2	2	7	5	5	3	8
m (days)	7	5	14	5	10	5	8	3	17
b (days)	13	14	26	8	19	17	29	9	32

Draw the project network and find the probability that the project is completed in 40 days.

UNIT-V

9	a)	What is JIT? Explain the characteristics of Just In Time.	CO5	7 Marks
	b)	What is ERP? Explain its major features.	CO3	7 Marks
		(OR)		
10	a)	What is value chain analysis? Explain its advantages.	CO3	7 Marks
	b)	What is Intellectual Property Rights? How to protect IPRs in globalized economy?	CO5	7 Marks

CODE No.:14BT40502 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2019

DATABASE MANAGEMENT SYSTEMS

[Electrical and Electronics Engineering, Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Draw and explain the detailed system architecture of DBMS.	CO1	8 Marks
	b)	Explain how the Database system is different from conventional file system.	CO1	6 Marks
		(OR)		
2	a)	Discuss about Key Constraints and Participation Constraints by demonstrating with examples.	CO1	7 Marks
	b)	Write short notes on Weak Entities by demonstrating with example.	CO1	7 Marks

UNIT-II

3	a)	Explain the integrity constraints supported by SQL.	CO5	7 Marks
	b)	What is relational algebra? Discuss the various operations of relational algebra	CO1	7 Marks
		(OR)		
4	a)	What is relational algebra? Explain about **selection** and **projection** operations with syntax and example.	CO3	7 Marks
	b)	Write short notes on Domain Relational Calculus.	CO3	7 Marks

UNIT-III

5	a)	Why the normalization is needed? Explain its concept.	CO3	6 Marks
	b)	Explain in detail about 4NF and 5NF.	CO3	8 Marks
		(OR)		
6	a)	Differentiate functional dependency and multi valued dependency with example.	CO3	7 Marks
	b)	Explain 4NF and 5NF with an example.	CO1	7 Marks

UNIT-IV

7	a)	Describe the properties of a transaction. Discuss about transaction operations.	CO1	8 Marks
	b)	Explain the concept of Testing for Serializability.	CO1	6 Marks
		(OR)		
8	a)	Explain in detail about locking mechanism.	CO2	7 Marks
	b)	Write and explain deadlock handling algorithm.	CO3	7 Marks

UNIT-V

9	a)	Describe difference methods of defining indexes on multiple keys.	CO3	8 Marks
	b)	Explain in detail about internal hashing Techniques.	CO3	6 Marks
		(OR)		
10	a)	Explain in detail about indexed accessing methods.	CO3	7 Marks
	b)	By considering relevant example, show insertion and deletion operations	CO3	7 Marks

on a B-Tree.

CODE No.:14BT80101 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2019

PRESTRESSED CONCRETE

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	Explain various losses of prestress in pre-tensioning and post-tensioning.	CO1	14 Marks
	(OR)		
2	Explain about materials used for prestressed concrete.	CO1	14 Marks

UNIT-II

3	A simply supported prestressed concrete beam spanning over 10m is of rectangular section 500mm wide by 750mm deep. The beam is prestressed by a parabolic cable having an eccentricity of 200mm at the centre of the span and zero at the end supports. The effective force in the cable is 1600kN. If the beam supports a total uniformly distributed load of 40kN/m which includes the self weight, i) Evaluate the extreme fibre stresses at the mid span section using the internal resisting couple method. ii) Calculate the force required in the cable having the same eccentricity to balance a total load of 50kN/m on the beam.	CO2	14 Marks
	(OR)		
4	An unsymmetrical I-section beam is used to support an imposed load of 2kN/m over a span of 8m. The sectional details are top flange 300mm wide and 60mm thick, bottom flange 100mm wide and 60mm thick, thickness of the web is 80mm, overall depth of the beam is 400mm. At the centre of the span, the effective prestressing force of 100kN is located at 50mm from the soffit of the beam. Estimate the stresses at the centre of span section of the beam for the following load conditions. i) Prestress + Self weight. ii) Prestress + Self weight + live load.	CO2	14 Marks

UNIT-III

5	Design a simply supported Type-1 prestressed beam with total moment M_T = 435kN-m (including an estimated self-weight moment M_{sw} = 55kN-m). The height of beam is 920mm. The prestress at transfer f_{po} = 1035N/mm² and at service f_{pe} = 860N/mm². Based on grade of concrete, allowable compressive stresses are 12.5N/mm² at transfer and 11N/mm² at service. Type of prestressing tendon is 7 wire strands. Nominal diameter of a tendon is 12.8mm and nominal area 99.3mm².	CO3	14 Marks
	(OR)		
6	The support section of a prestressed concrete beam, 150mm wide and 300mm deep is required to support an ultimate shear force of 70kN. The compressive prestresss at the centrodial axis is 5N/mm². The characteristic cube strength of concrete is 40N/mm². The cover to the tension reinforcement is 50mm. If the characteristic tensile strength of steel in	CO2	14 Marks

200N/mm², design shear reinforcement at the section.

UNIT-IV

7	Explain Guyon's method to calculate bursting tension in case of evenly distributed forces and in case of forces not evenly distributed.	CO1	14 Marks
	(OR)		
8	Write a short note on Guyon's method? Also, explain the Guyon's method of computing bursting tension in the case of end blocks subjected to forces not evenly distributed with multiple anchorages. Draw the neat sketches.	CO1	14 Marks

UNIT-V

9	A simply supported concrete beam of span 8m and rectangular cross-section, 125mm wide and 250mm deep, is prestressed by a single cable in which the total tensile force is 220kN. The center line of the cable is parallel to the axis of the beam and 75mm above the soffit over the middle third of the span and is curved upward in a parabola over the outer thirds of the span to a distance of 175mm above the soffit at the supports. If the modulus of elasticity of concrete is 35kN/mm². Calculate:		
	i) the upward deflection at mid-span due to prestress only.	CO2	7 Marks
	ii) the deflection when the beam is supporting its own weight.	CO2	7 Marks
	(OR)		
10	A concrete beam with a rectangular section 300mm wide and 500mm deep is prestressed by 2 post-tensioned cables of area 600mm² each, initially stressed to 1600 N/mm². The cables are located at a constant eccentricity of 100mm throughout the length of beam having a span of 10m. Let Es=210 kN/mm², Ec = 38 kN/mm²		
	i) Find the deflections at the center of span when it is supporting its own weight;	CO2	7 Marks
	ii) Allowing for 20% loss in prestress, find the final deflection at the center of span when it carries an imposed load of 18 kN/m.	CO2	7 Marks

CODE No.:14BT80102 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2019

ESTIMATION, COSTING & VALUATION

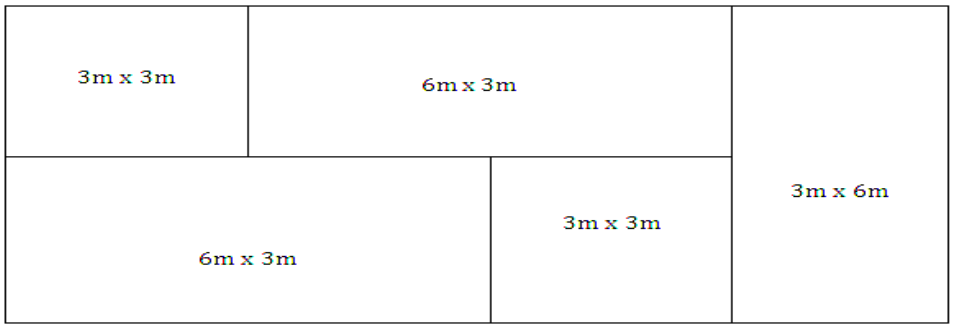
[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain deduction for segmental arch openings and deduction for lintels over openings.	CO1	2 Marks
	b)	Estimate the quantity of (i) Earth work Excavation, (ii) Footing concrete, (iii) Masonry in footing, (iv) D.P.C and (v) Brick work in super structure for the building from the given plan and section having following size. Wall thickness = 230mm; head room height = 3.0m; footing concrete = 1m x 0.3m; I footing = 0.7 x 0.3m; II footing = 0.5 x 0.3m; Plinth wall = 0.4 x 0.4m; flooring concrete = 150mm; floor finish CM 1:3 = 25mm; DPC = 20mm; roof slab = 125mm; weathering course L.C = 75mm; Assume the base of footing is 1.1m below GL.	CO2	12 Marks

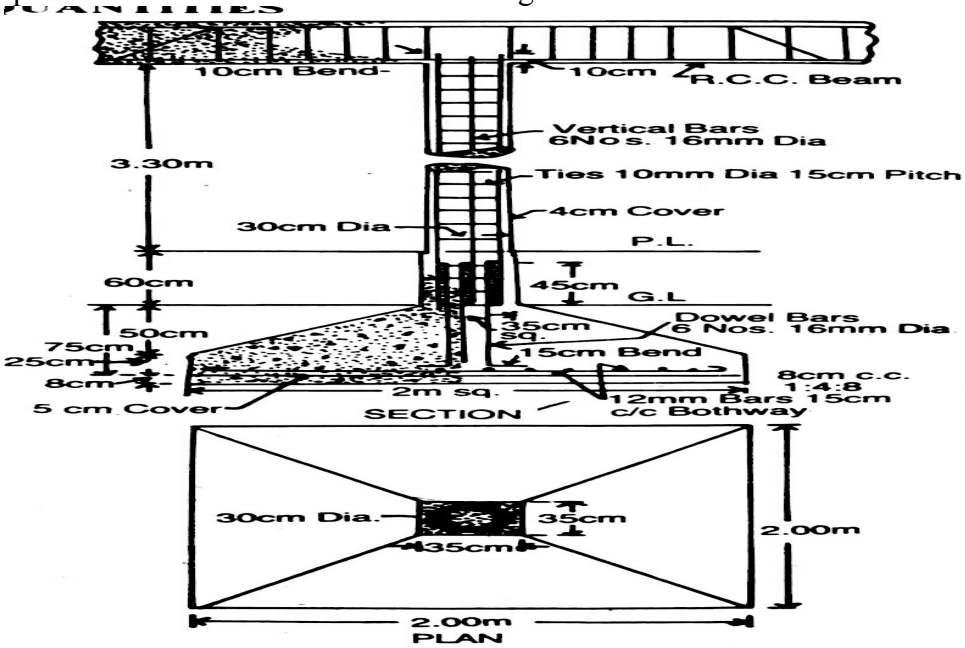


(OR)

2		Name the various types of estimations you know and under what circumstances each one of them prepared.	CO1	14 Marks

UNIT-II

3	a)	How to find out the weight per meter of a bar of any diameter?	CO2	3 Marks
	b)	Given a column and footing in the following figure. Work out the quantities of steel and concrete in footing and column.	CO2	11 Marks



(OR)

4	a)	Calculate the quantity of earth work for 200 meter length for a portion of road in a uniform ground the heights of banks at the two ends being 1.00m and 1.50m. The formation width is 12.0 meters and side slopes 2:1 (Horizontal: Vertical). Assume that there is no transverse slope.	CO2	7 Marks
	b)	Calculate the quantity of cement concrete for cement concreting two kilometers length of 7.50 meters wide road for 8.50 cm thick layer. And also prepare a detailed estimate. Cost at the rate of Rs.750.00 per cu.m.	CO2	7 Marks

UNIT-III

5		Workout cost per unit for the following items of work. i) Brick work in CM (1:6) for foundation. ii) PCC in 1:3:6 for foundation.	CO1	14 Marks

(OR)

6	a)	What is the purpose and method of writing specification? Describe briefly general and detailed specification.	CO1	7 Marks
	b)	Write detail specification of RCC (1:2:4) for beam concrete and painting for walls.	CO1	7 Marks

UNIT-IV

7	a)	Explain the conditions of contract in detailed.	CO1	7 Marks
	b)	Write a brief note on tender and tender notice.	CO1	7 Marks

(OR)

8	a)	Explain the following briefly: i) Earnest money. ii) security money. iii) legal requirements.	CO1	7 Marks
	b)	What is meant by arbitration? Explain advantages of setting the disputes by arbitration.	CO1	7 Marks

UNIT-V

9	a)	Briefly explain the different methods of valuation.	CO1	7 Marks
	b)	Define the term depreciation? And explain method of calculating depreciation.	CO3	7 Marks

(OR)

10	a)	What do you mean by valuation and explain various purposes of valuation.	CO1	10 Marks
	b)	Explain capitalized value with example.	CO3	4 Marks

CODE No.:14BT80106 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2019

INDUSTRIAL WASTE WATER TREATMENT

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is meant by toxic substances? Explain it briefly.	CO1	4 Marks
	b)	Design a primary settling tank to handle an average rate of flow of 10 MLD.	CO1	10 Marks
		(OR)		
2	a)	Explain the characteristics of the Treatment Plant Effluent.	CO1	6 Marks
	b)	What is DO and BOD? Derive the relation between them.	CO1	8 Marks

UNIT-II

3	a)	What are the principles of waste treatment.	CO2	6 Marks
	b)	With a neat sketch, describe the microorganism growth pattern in batch reactors.	CO2	8 Marks
		(OR)		
4		Distinguish between the various kinds of activated sludge processes. Explain the significant design criteria and steps for designing a conventional activated sludge process.	CO2	14 Marks

UNIT-III

5		Explain the design and operation of anaerobic filters.	CO1	14 Marks
		(OR)		
6	a)	Explain briefly the process of removal of phosphorous in industrial waste water treatment.	CO3	7 Marks
	b)	Explain the different types of anaerobic treatment processes. Anaerobic treatment is not generally accepted for wastewater treatment. Why?	CO3	7 Marks

UNIT-IV

7		Explain about treatment of pulp and paper mill wastes.	CO1	14 Marks
		(OR)		
8	a)	How to control industrial waste water by neutralization? What are its advantages?	CO4	7 Marks
	b)	Describe the massive lime Treatment for color Removal in pulp and paper mill.	CO4	7 Marks

UNIT-V

9	a)	What are the merits and demerits of common effluent treatment plants?	CO5	7 Marks
	b)	Explain how you treat a cluster of tannery plants effluent as a common treatment process.	CO5	7 Marks
		(OR)		
10		Explain manufacturing process of tanning industry.	CO1	14 Marks

CODE No.:14BT80110 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2019

GROUND IMPROVEMENT TECHNIQUES

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the factors influencing the selection of ground improvement techniques.	CO1	7 Marks
	b)	Explain various geotechnical problems associated with laterite soils and alluvial soils.	CO1	7 Marks
		(OR)		
2	a)	Explain in detail the role of ground improvement in foundation engineering.	CO1	7 Marks
	b)	Explain in brief the various methods of ground improvement.	CO1	7 Marks

UNIT-II

3	a)	What is mechanical stabilization? Explain them.	CO1	7 Marks
	b)	What are the factors affect the mechanical stability of a mixed soil?	CO1	7 Marks
		(OR)		
4	a)	What do you know about drainage of soils?	CO2	7 Marks
	b)	What are its uses? What are its ill effects?	CO2	7 Marks

UNIT-III

5	a)	Explain the need of densification of soils.	CO1	7 Marks
	b)	Give examples of laboratory versus field densification methods.	CO1	7 Marks
		(OR)		
6	a)	Illustrate the principals of densification of granular and Cohesive soils.	CO1	7 Marks
	b)	List the factors that affect compaction.	CO1	7 Marks

UNIT-IV

7	a)	Review injection method of grouting with the help of neatly labelled sketch.	CO1	7 Marks
	b)	Report mechanical stabilisation with: i) Cement. ii) Bitumen. iii) Chemicals.	CO1	7 Marks
		(OR)		
8	a)	Explain how expansive soils are stabilised.	CO1	7 Marks
	b)	Summarize “Gunting and Shotcreting”.	CO1	7 Marks

UNIT-V

9	a)	Describe with illustrations the differences between geotextiles and geomembranes.	CO1	7 Marks
	b)	What are the practical applications of geotextiles?	CO1	7 Marks
		(OR)		
10	a)	What are the practical applications of geotextiles?	CO5	7 Marks
	b)	Explain with clear illustrations, the principle involved in geo-textile	CO5	7 Marks

materials reinforcement for improving the bearing capacity of soil.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2019

UTILIZATION OF ELECTRICAL ENERGY

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		What is load equalization? Derive an expression for instantaneous motor torque momentum of inertia of the fly wheel and the motor slip. Sate any two assumptions made.	CO1	14 Marks
		(OR)		
2	a)	Explain in detail about various types of industrial loads.	CO1	7 Marks
	b)	Explain the concept of load equalization. Derive load equalization for decreasing load condition.	CO1	7 Marks

UNIT-II

3	a)	Define luminous flux, luminous intensity, illumination, lamp efficiency, utilization factor and maintenance factor.	CO1	7 Marks
	b)	An illumination of 500 lux is to be provided in a room of 30 x 20 metres with 50W and 5 feet fluorescent lamp. Find out the number of lamps and design the layout in the lighting installation.	CO3	7 Marks
		(OR)		
4	a)	Compare the merits and demerits of filament lamps and fluorescent lamps.	CO1	7 Marks
	b)	Two similar lamps having uniform intensity of 500 CP in all directions below the horizontal are mounted at a height of 4metres. What must be the maximum spacing between the lamps so that the illumination on the ground midway between the lamps shall be at least one half of the illumination directly under the lamp?	CO4	7 Marks

UNIT-III

5	a)	Describe with the help of neat sketch, the working of vertical core type induction furnace.	CO1, CO5	7 Marks
	b)	Estimate the efficiency of a high frequency induction furnace which takes 10 minutes to melt 1.8Kg of aluminium. The input to the furnace being 5kW and initial temperature 15^0C. Given specific heat of aluminum = 880J/Kg/^{0}C, Melting point of aluminum = 660^0C. Latent heat of fusion of aluminum = 32KJ/Kg and 1J = 2.78×10^{-7} KWh.	CO1, CO5	7 Marks
		(OR)		
6	a)	Compare between AC and DC Welding.	CO1, CO5	6 Marks
	b)	With the help of neat sketch, explain the principle of : i) Spot welding. ii) Seam welding.	CO1, CO5	8 Marks

UNIT-IV

7	a)	Write a short notes on the following. i) Traction system in India. ii) Diesel electric traction. iii) DC versus AC traction.	CO4	8 Marks
	b)	What are the various methods of braking DC motor?	CO4	6 Marks
		(OR)		
8	a)	Write short notes on sub-traction for single-phase AC systems.	CO1	7 Marks
	b)	Explain the different methods of electric braking and write their merits and limitations.	CO1	7 Marks

UNIT-V

9	a)	What do you understand by speed-time curves? What is its use in practice?	CO1, CO4	6 Marks
	b)	A train runs at an average speed 45km per hour between stations 2.5km apart. The train accelerates at 2kmphps and retards at 3kmphps. Find its maximum speed assuming a trapezoidal speed time curve. Calculate also the distance traveled by it before the brakes are applied.	CO1, CO4	8 Marks

(OR)

10	a)	Derive an expression for the tractive effort.	CO4	6 Marks
	b)	A train weighing 400 tonnes has speed reduced by regenerative braking from 40 to 20kmph over a distance of 2km as a down gradient of 20%. Calculate the electrical energy and average power returned to the line. Tractive resistance is 40 Newtons/Tonne and allowed rotational inertia of 10% and efficiency of conversion 75%.	CO4	8 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2019

HVDC AND FACTS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss the technical advantages of DC over AC transmission.	CO1	7 Marks
	b)	What are the types of HVDC links? Explain.	CO1	7 Marks
		(OR)		
2		Analyze a six pulse rectifier bridge circuit with an overlap angle less than 60^0 with the help of neat sketch. Deduce the relevant equations and draw the necessary waveforms.	CO2	14 Marks

UNIT-II

3	a)	Discuss two individual phase control firing schemes of HVDC system.	CO2	7 Marks
	b)	Discuss design criteria of DC filters and explain passive DC filters.	CO1	7 Marks
		(OR)		
4	a)	Discuss about the principles of DC link control.	CO1	7 Marks
	b)	Discuss the need for reactive power control in HVDC power stations.	CO1	7 Marks

UNIT-III

5	a)	Describe the basic types of FACTS controllers with their neat sketch.	CO1	7 Marks
	b)	Discuss concept of FACTS and also explain the importance of controllable parameters.	CO1	7 Marks
		(OR)		
6	a)	What is the importance of transmission line interconnection?	CO2	7 Marks
	b)	Mention some of the possible benefits of FACTS controllers.	CO2	7 Marks

UNIT-IV

7		Explain the methods of controllable VAR generation.	CO3	14 Marks
		(OR)		
8	a)	Explain the control scheme of STATCOM.	CO2	7 Marks
	b)	Explain the operation of TCSC.	CO2	7 Marks

UNIT-V

9	a)	Explain the control system adopted for control of P and Q using UPFC.	CO2, CO3	7 Marks
	b)	Explain about generalized FACTS controller.	CO2, CO3	7 Marks
		(OR)		
10		Discuss basic operating principles and control characteristics of IPFC.	CO2, CO3	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2019

POWER QUALITY

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are major power quality issues? Explain in detail.	CO1	7 Marks
	b)	List out various power quality standards.	CO5	7 Marks
		(OR)		
2		Discus the responsibilities of power suppliers and power users to maintain the power quality in the grid connected power system.	CO5	14 Marks

UNIT-II

3	a)	Explain various indexes used to estimate voltage sag.	CO1	7 Marks
	b)	Briefly explain the sources of sag and interruptions in power system.	CO1	7 Marks
		(OR)		
4	a)	Briefly discuss on impulsive and oscillatory transients.	CO1	6 Marks
	b)	What are the importances of estimating voltage sag performance? Explain any two methods to estimate sag performance.	CO3	8 Marks

UNIT-III

5	a)	Explain how the phenomenon of current distortion affects the voltage distortion under the presence of harmonics.	CO1	9 Marks
	b)	Discuss the harmonic distortion controlling process steps.	CO1	5 Marks
		(OR)		
6	a)	Describe the process of harmonic distortion evaluation on the utility system.	CO1	8 Marks
	b)	Explain the fundamentals of harmonic generation and waveform distortion.	CO1	6 Marks

UNIT-IV

7	a)	Explain about various power quality measuring instruments.	CO1	7 Marks
	b)	State the significance and objectives of power quality monitoring.	CO1	7 Marks
		(OR)		
8		Explain the operation and features of following monitoring equipments with neat diagram. i) Spectrum Analyzer. ii) Flicker Meters.	CO1	14 Marks

UNIT-V

9		Discuss the principle of operation of the following devices: i) Solid state current limiter. ii) Solid state transfer switch.	CO4	14 Marks
		(OR)		
10	a)	Explain Dynamic Voltage Restorer (DVR) for mitigation of voltage sag.	CO4	7 Marks
	b)	Explain the working principle of Solid State Current Limiter (SSCL).	CO1	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2019

SOLAR AND WIND ENERGY CONVERSION SYSTEMS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	With the help of block diagram, explain the functions of various blocks of a Wind Energy Conversion System.	CO3	7 Marks
	b)	Explain the maximum power operation using power control scheme.	CO1	7 Marks
		(OR)		
2	a)	Discuss the system design features of wind power systems.	CO1	7 Marks
	b)	Discuss the environmental aspects of wind power systems.	CO1	7 Marks

UNIT-II

3	a)	Draw and explain I-V characteristic of the PV module.	CO3	7 Marks
	b)	Explain different methods of extracting the peak power from a PV source.	CO3	7 Marks
		(OR)		
4	a)	Draw and explain P-V characteristic of the PV module.	CO3	7 Marks
	b)	Explain various factors influencing the electrical design of solar array.	CO3	7 Marks

UNIT-III

5	a)	Discuss the importance of MPPT in Grid connected solar PV system.	CO2	7 Marks
	b)	Analyze the importance of VSI and CSI in solar PV system.	CO2	7 Marks
		(OR)		
6	a)	Explain the operation of line commutated inverters used in solar energy system.	CO2	7 Marks
	b)	Explain the operation of AC power conditioners used in solar energy system.	CO2	7 Marks

UNIT-IV

7	a)	Explain various grid related problems in detail.	CO2	7 Marks
	b)	Discuss the concept of generator control in wind energy conversion system.	CO3	7 Marks
		(OR)		
8	a)	Explain the operation of induction generator in wind energy conversion system.	CO3	10 Marks
	b)	Discuss the role of AC voltage controllers in wind energy conversion system.	CO3	4 Marks

UNIT-V

9		What are the power quality issues affected by Distributed Generation? Explain about them.	CO3	14 Marks
		(OR)		
10		Discuss the role of custom power devices in distributed generation.	CO3	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2019

PRODUCTION & OPERATIONS MANAGEMENT

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Discuss about environment of operations.	CO2	7 Marks
	b)	Write short notes on production system decisions.	CO2	7 Marks
		(OR)		
2	a)	Distinguish between management and operations management with examples.	CO2	7 Marks
	b)	Write short notes on functions of management with an example.	CO2	7 Marks

UNIT-II

3	a)	Explain various types of forecasting with respect to time horizon.	CO2	7 Marks
	b)	What is forecast error and how to reduce the error in forecast?	CO2	7 Marks
		(OR)		
4	a)	Regression and Correlation are both termed associative methods of forecasting. Explain how they are similar in this respect and also how they are different.	CO2	7 Marks
	b)	A firm uses simple exponential smoothing with $\alpha = 0.1$ to forecast demand. The forecast for the week of February 1 was 500 units where as actual demand turned out to be 450 units. Forecast the demand for the week of February 15. Assuming that the actual demand for the week of February 8 is 505 units.	CO2	7 Marks

UNIT-III

5	a)	What is aggregate planning and explain the need of aggregate planning.	CO1	7 Marks
	b)	Explain various aggregate production planning strategies.	CO1	7 Marks
		(OR)		
6	a)	Discuss about aggregate planning problem and also discuss about any mathematical model to solve it.	CO1	7 Marks
	b)	Explain the objectives and functions of Master production schedule.	CO1	7 Marks

UNIT-IV

7		How MRP II differs from MRP? Explain MRP II with block diagram.	CO2	14 Marks
		(OR)		
8	a)	Explain Manufacturing resource planning.	CO2	7 Marks
	b)	Explain Just In Time (JIT) philosophy and pull system of materials flow.	CO3	7 Marks

UNIT-V

9	a)	Explain the steps involved in Johnson's algorithm for flow shop scheduling.	CO4	7 Marks

b) Consider the following 2 machines and 6 jobs flow shop problem. CO4 7 Marks

Job	Machine 1	Machine 2
1	5	7
2	10	8
3	8	13
4	9	7
5	6	11
6	12	10

Obtain the optimal schedule and the corresponding make span for the above problem.

(OR)

10 a) Solve the following problem through Palmer's Heuristic Algorithm. CO1 7 Marks

Machine	T1	T2	T3	T4
M1	6	8	3	4
M2	5	1	5	4
M3	4	4	4	2

b) Solve the following problem through NEH Heuristic Algorithm. CO1 7 Marks

Machine	T1	T2	T3	T4
M1	7	9	4	5
M2	6	2	6	5
M3	6	5	7	3

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2019

MECHATRONICS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1		Describe the role of mechatronics systems in production and manufacturing process with an application.	CO1	14 Marks
		(OR)		
2		With neat sketch, explain data conversion process with the help of signal conditioner. List out the ideal characteristics s of operational amplifier.	CO2	14 Marks

UNIT-II

3		Explain the working of an Electro-Hydraulic actuation system with a neat sketch.	CO2	14 Marks
		(OR)		
4	a)	Draw and explain position dependent sequencing circuit for two cylinders in pneumatics.	CO2	7 Marks
	b)	Explain the method of speed control in AC motors.	CO2	7 Marks

UNIT-III

5		Classify discrete time signals with examples for each.	CO2	14 Marks
		(OR)		
6		Explain the different types of Transform-Domain Representation of Discrete Signals Systems.	CO1	14 Marks

UNIT-IV

7	a)	Differentiate Microprocessor and Microcontroller.	CO2	7 Marks
	b)	List some applications of Microprocessor. Explain any one application with diagram.	CO4	7 Marks
		(OR)		
8		What is Quantization? Explain about Analog to Digital converter with a neat sketch and discuss the conversion process in detail.	CO1	14 Marks

UNIT-V

9		Draw the architecture of PLC and explain each block in detail.	CO4	14 Marks
		(OR)		
10		With neat sketches, explain the working of PID controller with its characteristics.	CO4	14 Marks

CODE No.:14BT80401 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2019

CELLULAR AND MOBILE COMMUNICATIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the performance criteria of a basic cellular system.	CO1	7 Marks
	b)	Hexagonal cell model is used for radio coverage of each base station. Justify.	CO1	7 Marks
		(OR)		
2	a)	Derive an analytical expression for the desired C/I from a normal case in an omnidirectional antenna.	CO1	7 Marks
	b)	Explain Frequency reuse distance and its schemes.	CO1	7 Marks

UNIT-II

3	a)	Mention the steps required for obtaining a point to point model.	CO1	7 Marks
	b)	Obtain the point to point prediction model.	CO1	7 Marks
		(OR)		
4	a)	Explain the propagation mechanism over water.	CO1	7 Marks
	b)	Explain the basic characteristics of a basic antenna structure.	CO1	7 Marks

UNIT-III

5	a)	How are channels assigned to a traveling mobile user?	CO2	7 Marks
	b)	Explain sectoring principle with neat diagrams.	CO2	7 Marks
		(OR)		
6	a)	Determine the probability of requirement of a Handoff.	CO1	7 Marks
	b)	Explain the process of assigning a channel to a user and traffic in a cell.	CO1	7 Marks

UNIT-IV

7	a)	Which type of modulation technique is used in GSM mobile wireless system? Explain in detail with neat block diagram.	CO1	7 Marks
	b)	Briefly explain about convolution codes.	CO1	7 Marks
		(OR)		
8	a)	Provide a simple explanation why QPSK, providing twice the bit rate of PSK, is used for downlink transmission in the W-CDMA system while PSK is used in the uplink direction.	CO1	7 Marks
	b)	Differentiate between conventional FDM and OFDM systems.	CO1	7 Marks

UNIT-V

9	a)	Derive the probability for bit error cases.	CO3	7 Marks
	b)	How is Voice signal processed and coded in cellular systems?	CO1	7 Marks
		(OR)		
10	a)	Explain the operation of IS 95.	CO3	7 Marks
	b)	Elaborate handoff, location, and paging procedures in mobile communications.	CO3	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2019

LOW POWER CMOS VLSI DESIGN

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain about sources of power dissipation in digital integrated circuits.	CO1	7 Marks
	b)	Elaborate on technology and device innovations with respect to low power.	CO2	7 Marks
		(OR)		
2	a)	How power dissipation can be estimated at architecture level?	CO2	7 Marks
	b)	Illustrate the need for low power IC's.	CO2	7 Marks

UNIT-II

3	a)	Explain the importance of event driven logic simulation.	CO1	7 Marks
	b)	Discuss about the characteristics of Monto-carlo power simulation.	CO1	7 Marks
		(OR)		
4	a)	Elaborate on power model based on component operation with example.	CO2	7 Marks
	b)	Compute the transition density and static probability of Y = A +BC given $P(a)$ = 0.4, $P(b)$ = 0.2, $P(c)$ = 0.3, $D(a)$ = 4, $D(b)$ = 5, $D(C)$ = 2.	CO3	7 Marks

UNIT-III

5	a)	Discuss various versions of transistor re-ordering techniques with an example.	CO3	7 Marks
	b)	Write the differences between single edge triggered flipflop and double edge triggered flipflop.	CO2	7 Marks
		(OR)		
6	a)	Implement the Boolean function Y = (A+B) (C+D) using network construction algorithm with CMOS logic.	CO3	7 Marks
	b)	Apply and analyze pre-computation logic to trade area for power in a binary comparator function.	CO3	7 Marks

UNIT-IV

7	a)	Explain about SRAM cell.	CO1	6 Marks
	b)	Explain pulsed wordline and reduced bitline swing.	CO1	8 Marks
		(OR)		
8		Explain about charge recycling bus.	CO1	14 Marks

UNIT-V

9	a)	Explain about adaptive filtering to obtain low power in the design of digital filters.	CO1	7 Marks
	b)	Derive an expression for power dissipation of uniprocessing and parallel processing systems with examples.	CO2	7 Marks
		(OR)		
10	a)	Elucidate how the power efficiency takes place in a pipelined system.	CO2	7 Marks
	b)	With an example, illustrate the operator transformation on a control data flow graph.	CO1	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2019

DESIGN PATTERNS

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is a design pattern? How to use a design pattern?	CO1	7 Marks
	b)	What is the catalog of design pattern? Explain.	CO1	7 Marks
		(OR)		
2	a)	Explain design patterns in Smalltalk MVC.	CO1	7 Marks
	b)	Describe how to select a design pattern.	CO4	7 Marks

UNIT-II

3	a)	Explain creational patterns for abstract factory with a suitable example.	CO2	7 Marks
	b)	What is a singleton creational pattern? Explain.	CO2	7 Marks
		(OR)		
4		Briefly explain the builder pattern with its intent, architecture, consequences and implementation issues.	CO2	14 Marks

UNIT-III

5	a)	What is the motivation for the Adapter? Explain in detail.	CO2	7 Marks
	b)	Mention the consequences and implementation issues of the Structural patterns.	CO3	7 Marks
		(OR)		
6	a)	Discuss about Façade Pattern.	CO1	7 Marks
	b)	Describe various applications of Structural Patterns.	CO4	7 Marks

UNIT-IV

7	a)	Discuss benefits and liabilities of Chain of Responsibility Pattern	CO1	7 Marks
	b)	Briefly explain the Iterator with sample code.	CO3	7 Marks
		(OR)		
8	a)	Describe consequences and implementation issues of Observer Pattern.	CO3	7 Marks
	b)	Summarize the motivation and applicability of Strategy Pattern.	CO2	7 Marks

UNIT-V

9	a)	Write short notes on Designing a Document editor.	CO2	7 Marks
	b)	Briefly explain about Embellishing the user interface.	CO3	7 Marks
		(OR)		
10		Illustrate with an example on sequence and collaboration diagrams.	CO2	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2019

BIG DATA

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain Sampling and types of Data Elements in Big Data.	CO1	7 Marks
	b)	Explain Categorization of Data with examples.	CO1	7 Marks
		(OR)		
2	a)	Explain standardizing of Data.	CO1	7 Marks
	b)	Explain Outlier Detection and Treatment in Big Data.	CO1	7 Marks

UNIT-II

3	a)	What are the modes that a Hadoop can run?	CO1	7 Marks
	b)	Explain Job tracker and Task tracker.	CO1	7 Marks
		(OR)		
4		Explain following commands of HDFS with syntax and at least one example of each. i) get. ii) cp. iii) chown.	CO2	14 Marks

UNIT-III

5		Illustrate Anatomy of Map Reduce with neat sketch.	CO1	14 Marks
		(OR)		
6	a)	Explain Failures in Map Reduce.	CO1	7 Marks
	b)	Differentiate Map reduce 1.0 and 2.0.	CO1	7 Marks

UNIT-IV

7	a)	Explain the role of driver code, mapper code and reducer code within a map reduce program model by a suitable example.	CO2	7 Marks
	b)	Explain Map-reduce framework in brief.	CO2	7 Marks
		(OR)		
8	a)	Discuss how Big Data model will help in effective data flow.	CO1	7 Marks
	b)	Explain how HBase uses Zookeeper to Build Applications with Zookeeper.	CO2	7 Marks

UNIT-V

9	a)	Explain Hadoop usage at Last.fm.	CO1	7 Marks
	b)	Explain Data Architecture at Facebook.	CO1	7 Marks
		(OR)		
10		Explain Nutch Search Engine with its data structures and Architecture.	CO1	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2019

FIBER OPTICS & LASER INSTRUMENTATION

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What are the different types of optical fibers and their characteristics?	CO2	6 Marks
	b)	What is ISI in optical fibers? Derive an expression for rms pulse broadening in single mode fiber due to intra-modal dispersion.	CO2	8 Marks
		(OR)		
2	a)	Explain about step index fiber structure and graded index fiber structure.	CO2	6 Marks
	b)	Distinguish between intrinsic and extrinsic losses.	CO1	8 Marks

UNIT-II

3	a)	Explain the concepts of fiber Rotation rate sensors.	CO1	7 Marks
	b)	Describe role of Moire-fringes in sensing.	CO1	7 Marks
		(OR)		
4	a)	Describe the working of Moire-Fringes modulation fiber optic sensor.	CO1	6 Marks
	b)	Derive the relationship between angular velocity and phase shift in fiber optic Gyro. Also explain the operation of closed loop fiber optic Gyro with a neat diagram.	CO1	8 Marks

UNIT-III

5	a)	What is meant by population inversion? How it can be achieved in lasers.	CO1	7 Marks
	b)	Explain the advantage of four energy level over the three level system in lasers.	CO1	7 Marks
		(OR)		
6	a)	Explain the different techniques used for Q-switching.	CO1	8 Marks
	b)	Briefly explain about mode locking of lasers.	CO1	6 Marks

UNIT-IV

7	a)	Explain the application of lasers in melting and trimming of materials.	CO1	7 Marks
	b)	What are the requirements of laser instruments for surgery and what are the areas of medical laser surgery?	CO1	7 Marks
		(OR)		
8	a)	With a neat diagram, explain about lasers in tissue interaction.	CO1	8 Marks
	b)	Write short notes on how lasers are used in Endoscopy.	CO1	6 Marks

UNIT-V

9	a)	Discuss the basic principle of holography.	CO1	7 Marks
	b)	Write a technical note on brain surgery.	CO1	7 Marks
		(OR)		
10	a)	Describe with theory the working principle of Acousto-optic modulator.	CO1	7 Marks
	b)	What are the engineering and scientific uses of Holography?	CO1	7 Marks

CODE No.:14BT81006 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2019

INSTRUMENTATION IN PROCESS INDUSTRIES

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	What is the source for Food industries? Explain the milk processing plant flow with block diagram.	CO1	7 Marks
	b)	Explain the role of analyzers in food industry.	CO1	7 Marks
		(OR)		
2		Describe the condition for consistency for liquids. Explain about sensors in Food industries with sketch.	CO1	14 Marks

UNIT-II

3	a)	Describe the sensors that measure the process variables in pulp and paper mill control applications.	CO1	7 Marks
	b)	Explain the Strain Gauge type Consistency Sensor with a sketch.	CO1	7 Marks
		(OR)		
4		Describe the Typical Control Techniques used in paper industry (SPC, DDPC).	CO1	14 Marks

UNIT-III

5	a)	Write about the working of pneumatic bin gate valve in a pharmaceutical industry.	CO1	7 Marks
	b)	Explain the process of cyanide analyzer in a pharmaceutical industry.	CO1	7 Marks
		(OR)		
6		With the help a neat sketch, explain the computer configuration for a batch chemical synthesis.	CO1	14 Marks

UNIT-IV

7		Describe any two important processes involved in making of steel.	CO1	14 Marks
		(OR)		
8		Explain in detail about blast furnace stove combustion control center with a neat flow diagram.	CO1	14 Marks

UNIT-V

9		Write short notes on:	CO	
		i) High speed column pressure control.	1	7 Marks
		ii) Vacuum column pressure control.	CO1	7 Marks
		(OR)		
10	a)	Describe thermosiphon reboiler with a neat sketch.	CO1	7 Marks
	b)	Write in detail about refrigeration cycle.	CO1	7 Marks

CODE No.:14BT81201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2019

CLOUD COMPUTING

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define Cloud Computing. List Cloud characteristics.	CO1	7 Marks
	b)	Explain the limitations of the Cloud Computing.	CO1	7 Marks
		(OR)		
2		Explain in-detail about Infrastructural models.	CO1	14 Marks

UNIT-II

3	a)	Explain different types and illustrate the process of dynamic scaling.	CO1	7 Marks
	b)	What is rapid elasticity? Discuss the elastic resource capacity architecture.	CO1	7 Marks
		(OR)		
4	a)	Describe the work load distribution and resource pooling.	CO2	7 Marks
	b)	Distinguish between Dynamic scalability and Elastic Resource Capacity.	CO1	7 Marks

UNIT-III

5		Describe in detail about Advanced Cloud Architectures.	CO1	14 Marks
		(OR)		
6	a)	Describe Hypervisor Clustering architecture.	CO1	7 Marks
	b)	Discuss about Load Balanced Virtual Switches.	CO1	7 Marks

UNIT-IV

7		Explain in details about the Cloud Delivery model Considerations.	CO2	14 Marks
		(OR)		
8	a)	Explain the Cloud usage cost metrics.	CO1	7 Marks
	b)	Write about Cost Management Considerations.	CO1	7 Marks

UNIT-V

9	a)	Define Virtualization. Identify the benefits of Virtualized Technology.	CO2	8 Marks
	b)	List the objectives of virtualization.	CO1	6 Marks
		(OR)		
10		Describe in-detail about Microsoft Hyper-V and working procedure.	CO1	14 Marks

CODE No.:14BT81202 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2019

CRYPTOGRAPHY AND NETWORK SECURITY

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Distinguish between passive attacks and active attacks.	CO1	7 Marks
	b)	Discuss about various security services.	CO1	7 Marks
		(OR)		
2	a)	Illustrate with an example on each of the Ceasar Cipher and Playfair Cipher.	CO1	8 Marks
	b)	Briefly explain Transposition technique.	CO2	6 Marks

UNIT-II

3	a)	Describe the mechanism on how Public-Key Cryptosystem solves the problem with the symmetric encryption.	CO1	7 Marks
	b)	Discuss about RSA algorithm.	CO1	7 Marks
		(OR)		
4	a)	Describe the principles of public key crypto systems.	CO1	6 Marks
	b)	Explain the Diffie-Hellman algorithm. Describe how this algorithm is insecure against man-in-the-middle attack.	CO2	8 Marks

UNIT-III

5	a)	List out the functions used to produce an authenticator.	CO1	4 Marks
	b)	Describe various ways in which hash code can be used to provide message authentication.	CO1	10 Marks
		(OR)		
6	a)	Discuss about HMAC objectives and its algorithm.	CO1	7 Marks
	b)	Briefly explain the need of Kerberos and list out its versions.	CO1	7 Marks

UNIT-IV

7	a)	Draw the general format of PGP messages. Explain each field.	CO1	6 Marks
	b)	Describe the process of message generation and message reception of PGP.	CO1	8 Marks
		(OR)		
8	a)	Differentiate between IPSec transport and tunnel modes.	CO1	6 Marks
	b)	Draw the IPSec AH and ESP formats.	CO1	8 Marks

UNIT-V

9	a)	What are typical phases of operation of a virus or worm? Explain.	CO2	7 Marks
	b)	What is the role of encryption in the operation of a virus? Explain.	CO2	7 Marks
		(OR)		
10	a)	What metrics are useful for profile-based intrusion detection?	CO2	7 Marks
	b)	List and briefly define four techniques used to avoid guessable passwords.	CO2	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2019

CRYPTOGRAPHY AND NETWORK SECURITY

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Describe the general model for network security with its four basic tasks in design of a security service.	CO2	6 Marks
	b)	Describe the following terms with respect to security objectives: Confidentiality, Integrity, Availability, Authenticity.	CO1	8 Marks
		(OR)		
2	a)	Briefly explain various symmetric cipher models.	CO2	4 Marks
	b)	Convert plain text "pay more money" into cipher text using Hill Cipher with Key Matrix given below 17 17 5 21 18 21 2 2 19	CO2	10 Marks

UNIT-II

3	a)	Illustrate the functions used in AES Encryption algorithm with neat diagram	CO1	7 Marks
	b)	Analyze Brute force attack is app lied on DES and AES ciphers. Compare with Cryptanalysis with respect to DES and AES.	CO1	7 Marks
		(OR)		
4	a)	Draw the classical fiestel cipher network. Describe the design features and parameters of a fiestel network.	CO1	7 Marks
	b)	Explain the block cipher design principles.	CO1	7 Marks

UNIT-III

5	a)	Elaborate various Message Authentication Functions.	CO1	8 Marks
	b)	Discuss about X.509 Authentication Service.	CO1	6 Marks
		(OR)		
6	a)	Discuss about Secure Hash algorithm.	CO1	7 Marks
	b)	What is a Digital Signature Standard and explain its algorithm?	CO1	7 Marks

UNIT-IV

7	a)	Demonstrate PGP Cryptographic functions with neat diagrams.	CO1	7 Marks
	b)	Discuss about S/MIME in detail.	CO2	7 Marks
		(OR)		
8	a)	List IPSec Documents.	CO1	7 Marks
	b)	Summarize the operation of Transport and Tunnel modes of AH and ESP.	CO1	7 Marks

UNIT-V

9	a)	List and define various malicious programs.	CO2	7 Marks
	b)	Explain the phases, types and structure of virus.	CO1	7 Marks
		(OR)		
10	a)	Write short notes on reference monitor concept.	CO1	7 Marks
	b)	Describe various password guessing and selection strategies.	CO1	7 Marks

CODE No.:14BT81204 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Supplementary Examinations June - 2019

INFORMATION RETRIEVAL SYTEMS

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain various types of Information Retrieval Systems.	CO1	7 Marks
	b)	How Digital Libraries can be used as Information base Systems?	CO2	7 Marks
		(OR)		
2	a)	Explain Bayesian Mathematics for Mathematical algorithms.	CO3	7 Marks
	b)	Differentiate N-Gram Data Structures and PAT Data Structure.	CO1	7 Marks

UNIT-II

3	a)	Discuss about Document and Index database search approaches.	CO1	8 Marks
	b)	Describe the similarities and differences between term stemming algorithms and n-grams. Describe how they affect precision and recall.	CO1	6 Marks
		(OR)		
4	a)	Illustrate zoning and creation of processing tokens	CO1	7 Marks
	b)	Discuss about automatic indexing of text and multimedia.	CO1	7 Marks

UNIT-III

5	a)	Explain the process involved in Term clustering.	CO1	8 Marks
	b)	Write short notes on Thesaurus.	CO2	6 Marks
		(OR)		
6	a)	Explain the similarity measures that can be used in User search techniques.	CO1	9 Marks
	b)	Briefly describe the concept of Ranking.	CO2	5 Marks

UNIT-IV

7	a)	Explain the process of sequential listing of the Hits.	CO2	7 Marks
	b)	Discuss display of the item in information retrieval systems.	CO1	7 Marks
		(OR)		
8	a)	Write short notes on collaborative filtering.	CO1	7 Marks
	b)	Explain audio presentation and video presentation in detail.	CO1	7 Marks

UNIT-V

9	a)	Explain the Boyer-Moore text search algorithm with an example.	CO1	8 Marks
	b)	How the information system is evaluated and what are the measures used in it?	CO2	6 Marks
		(OR)		
10	a)	What is TREC results and how it can be used in information system evaluation?	CO3	7 Marks
	b)	What algorithmetic basis is used for the GESCAN and Fast Data Finder hardware text search machines?	CO3	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC16) Regular/Supplementary Examinations January - 2019

MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Obtain the principal disjunctive normal form of the formulas $(Q \rightarrow P) \wedge (\neg P \wedge Q)$ — 6 Marks

   b) Show that $R \wedge (P \vee Q)$ is a valid conclusion from the premises $(P \vee Q)$, $(Q \rightarrow R)$, $(P \rightarrow M)$ and $\neg M$. — 6 Marks

(OR)

2. a) Show that $((P \text{ V } Q) \wedge \neg(\neg(P \wedge((\neg Q \text{ V } \neg R))) \text{ V } (\neg P \wedge \neg Q) \text{ V } (\neg P \wedge \neg R)$ is tautology. — 6 Marks

   b) Show that R V S follows logically from the premises C V D, $(C \text{ V } D) \rightarrow \neg H$, $\neg H \rightarrow (A \wedge \neg B)$ and $(A \wedge \neg B) \rightarrow (R \text{ V } S)$. — 6 Marks

UNIT-II

3. a) Draw the Hasse diagram of the set {2, 4, 8, 16} under the partial ordering relation "divides" and indicate those which are totally ordered. — 6 Marks

   b) Show that $f\{x,y\} = X^y$ is a primitive recursive function. — 6 Marks

(OR)

4. a) Let x = {1, 2, 3, 4} and R= {< x, y > / x>y}. Draw the graph of R and also its matrix. — 6 Marks

   b) If A = {1, 2, 3, 5, 30} and R is the divisibility relation, prove that (A, R) is a lattice but not a distributive lattice, and the relation $\leq$ be such that $x \leq y$ if x divides y. Draw the Hasse diagram of $< X, \leq >$. — 6 Marks

UNIT-III

5. a) Let S = {a, b, c} let * denote a binary operation on S given by — 6 Marks

*	*a*	*b*	*c*
a	*a*	*b*	*c*
b	*b*	*b*	*c*
c	*c*	*b*	*c*

and also

Let P = {1,2,3} and $\oplus$ be a binary operation on P given by

$\oplus$	1	2	3
1	1	2	1
2	1	2	2
3	1	2	3

Then show that (S, *) and (P, $\oplus$) are isomorphic.

   b) If (G, *) is an abelian group, then for all a, b $\in$ G show that $(a * b)^n = a^n * b^n$. — 6 Marks

(OR)

6. a) State and prove the Pigeonhole and the generalized Pigeonhole Principle. 6 Marks

b) Let G be the set of all non-zero real numbers and let a * b = $\frac{1}{2}$ ab. Show that < G, * > is an abelian group. 6 Marks

UNIT-IV

7. Using the generating function method, solve the recurrence relation $a_n - 3a_{n-1} = n$, $n \geq 1$ given that $a_o = 1$. 12 Marks

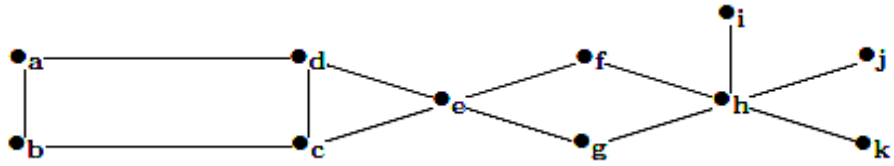
(OR)

8. Solve the recurrence relation $\boldsymbol{a_n + a_{n-1} - 6a_{n-2} = 0}$, for $n \geq 2$ given that $\boldsymbol{a_o = -1}$ and $\boldsymbol{a_1 = 8}$. 12 Marks

UNIT-V

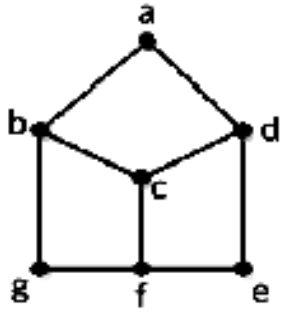
9. a) Prove that a tree with n vertices has n-1 edges. 6 Marks

b) Draw the DFS and BFS for the following graph and explain DFS and BFS. 6 Marks

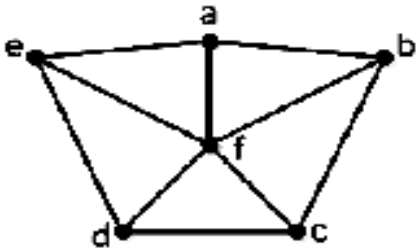


(OR)

10. a) Prove that there is no Hamiltonian cycle in the following graph. 6 Marks



b) Define chromatic number of a graph. Find chromatic number of wheel graph. 6 Marks



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CODE No.:16MC1HS01 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC16) Regular/Supplementary Examinations January - 2019

ACCOUNTING AND FINANCIAL MANAGEMENT

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Define Accounting. Explain the concepts and conventions of Accounting. 12 Marks

(OR)

2. Journalize the following transactions with narration. 12 Marks

2012 Jan. 1. Received cash from A Rs. 15,000
4. Purchased goods for cash Rs. 12,000
9. Purchased Stationary for Rs. 500 and paid through cheque.
13. Purchased furniture from furniture shop for Rs. 3,800
22. Sold goods to Raghupathi for Rs. 11,300
29. Received cash for Raghupathi in full settlement of his account Rs. 11,000.

UNIT-II

3. Differentiate between Capital and Revenue receipts. 12 Marks

(OR)

4. From the following information, prepare the Profit and Loss Account of a Trader for the year ending on 31st March 2015: 12 Marks

PARTICULARS	Rs.	PARTICULARS	Rs.
Gross Profit	5,00,000	Commission Allowed	2,000
Salaries	10,000	Commission Received	3,000
Wages	1,000	Interest Allowed	3,000
Carriage Inward	2,000	Interest Received	4,000
Carriage Outward	5,000	Rent Paid	4,000
Freight Inward	3,000	Rent Received	5,000
Freight Outward	5,000	Apprenticeship Premium Received	5,000
Discount Allowed	50,000	General Expenses	10,000
Discount Received	17,000	Miscellaneous Income	30,000
Dividend Received	25,000	Charges	10,000
Audit Fee	30,000		
Legal Expenses	25,000		
Stationery Expenses	10,000		

UNIT-III

5. Explain the role and objectives of Financial Manager. 12 Marks

(OR)

6. Explain the importance of Capital to a business organization. 12 Marks

UNIT-IV

7. List and explain various ratios involved in profitability ratios. 12 Marks

(OR)

8. From the following data determine: 12 Marks

i) BEP.

ii) Margin of safety during period II.

Particulars	Period I	Period II
Sales (Rs)	150000	200000
Profit (Rs)	30000	40000

UNIT-V

9. Choose the project which is profitable under NPV, if the cost of capital is 12% and each project is costing Rs. 90000 each. 12 Marks

Year / Proposal	Project A	Project B	Project C
1	90000	100000	65000
2	110000	120000	200000
3	130000	105000	150000
4	150000	95000	110000

(OR)

10. Differentiate between Internal Rate of Return and Net Present Value methods. 12 Marks

CODE No.:16MC10101 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC16) Regular/Supplementary Examinations January - 2019

COMPUTER ORGANIZATION

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Simplify the following expression.
$$F(A, B, C, D) = \sum(0, 2, 4, 5, 6, 7, 8, 10, 13, 15)$$
(i) Sum-of-products form. 6 Marks
(ii) Product-of-sums form. 6 Marks

(OR)

2. Relate different codes of digital computers with examples. 12 Marks

UNIT-II

3. a) Explain the state diagram for sequential circuits. 6 Marks
b) Design the combinational circuit for full-adder by using two half-adders. 6 Marks

(OR)

4. Explain the combinational circuits in detail. 12 Marks

UNIT-III

5. Describe the general register organization in detail. 12 Marks

(OR)

6. Assess the program control instructions in CPU. 12 Marks

UNIT-IV

7. Draw the flowchart for instruction cycle and explain. 12 Marks

(OR)

8. Summarize the common bus system of a basic computer with diagram. 12 Marks

UNIT-V

9. a) Explain virtual memory in detail. 6 Marks
b) Compare associate memory, cache memory and virtual memory. 6 Marks

(OR)

10. Describe asynchronous data transfer. 12 Marks

CODE No.:16MC10102 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC16) Regular/Supplementary Examinations January - 2019

OPERATING SYSTEMS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Based on what you know, how would you explain the POSIX Shared Memory of IPC System? 12 Marks

(OR)

2. Explain operating system structure. 12 Marks

UNIT-II

3. Distinguish FCFS and SJF Scheduling algorithms with examples. 12 Marks

(OR)

4. What is process scheduling? Explain different types of schedulers. 12 Marks

UNIT-III

5. a) Describe the semaphore solution for critical region. 8 Marks
   b) How the problem among dining philosophers can be resolved? Suggest a suitable algorithm. 4 Marks

(OR)

6. Will you state or interpret in your own words about Binary Semaphores and Bounded Waiting. 12 Marks

UNIT-IV

7. a) Discuss about Demand Paging. 6 Marks
   b) Identify, under which circumstances the page faults occur. Describe the actions taken by the operating system when a page fault occurs. 6 Marks

(OR)

8. a) Describe first fit, best fit and worst fit algorithms. 6 Marks
   b) Explicate about advantages and disadvantages of paging. 6 Marks

UNIT-V

9. a) How can the access matrix be implemented effectively? 4 Marks
   b) Discuss various methods for implementing access matrix 8 Marks

(OR)

10. Explain the Security problem. 12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC16) Regular/Supplementary Examinations January - 2019

PROGRAMMING IN C

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Predict the output of **c, d, e** and **f** in the below code. 4 Marks

```
float c=15/10.0;
int d=15/10;
float e=15/10;
float f=15.0/10.0;
```

b) Tell the type conversions with a suitable example. 8 Marks

(OR)

2. a) Write the size and range of the basic data types. 6 Marks
b) Consider x = 0, y = 0 and z =1. 3 Marks
Find the value of **x, y** and **z** after executing the following code.

```
if(x)
 if(y)
 z=3;
else
z=2;
```

c) Solve the following expression and find output of the following code. 3 Marks

```
void main( )
{
  int x=!5-4+2*5;
printf("%d",x)
}
```

UNIT-II

3. a) State the differences between entry controlled and exit controlled loop with an example. 7 Marks
b) Write the usage of break and continue statement with example. 5 Marks

(OR)

4. a) What is two-dimensional array? How they are stored in memory? 6 Marks
b) Explain memory allocation functions with suitable example. 6 Marks

UNIT-III

5. a) Is it possible to pass an entire array to a function as an argument? State with an example. 6 Marks
b) Illuminate Recursive function with an example. 6 Marks

(OR)

6. a) Distinguish the advantages and disadvantages of Pointers. 6 Marks
b) State the arithmetic operations which are allowed in pointers. Write the use of NULL pointer to avoid dangling state. 6 Marks

UNIT-IV

7. How to declare structure and its variables? Specify accessing operators for structures. 12 Marks

(OR)

8. Construct a structure that can describe a hotel. It should have members that include the name, address, grade, average, room charge and number of rooms. Write the functions to perform the following operations: 12 Marks

i) To print out hotels of a given grade in order of charges.
ii) To print out hotels with room charges less than a given value.

UNIT-V

9. Write a C program to demonstrate sequential file access. 12 Marks

(OR)

10. a) Relate conditional preprocess directives with suitable example. 7 Marks
    b) Specify various access modes for text files. 5 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC16) Supplementary Examinations July - 2019

MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Obtain disjunctive normal form for $(P \wedge (P \rightarrow Q)$. 6 Marks
   b) Show that $R \rightarrow S$ can be derived from the premises: 6 Marks
   $P \rightarrow (Q \rightarrow S)$, $\neg R \vee P$ and Q.

(OR)

2. a) Show that $((P \vee Q) \wedge \neg(\neg(P \wedge((\neg Q \vee \neg R))) \vee (\neg P \wedge \neg Q) \vee (\neg P \wedge \neg R)$ is tautology. 6 Marks
   b) Show that R V S follows logically from the premises $C \vee D$, $(C \vee D) \rightarrow \neg H$, $\neg H \rightarrow (A \wedge \neg B)$ and $(A \wedge \neg B) \rightarrow (R \vee S)$. 6 Marks

UNIT-II

3. a) Let A = {1,2,3,4} and f and g be functions from A to A given by f = { (1,4), (2,1), (3,2), (4,3) } and g = { (1,2), (2,3), (3,4), (4,1) }. Prove that **f** and **g** are inverse of each other. 6 Marks
   b) Draw Hasse diagram representing the positive divisor of 36. 6 Marks

(OR)

4. a) Define equivalence relation. Prove that the relation given below is an equivalence relation. Let X = {1,2,....., 7} and R = { (x,y) / x-y is divisible by 3}. 6 Marks
   b) Let A = {a,b,c,d} and P(A) be power set of A. Draw Hasse diagram for $< P(A), \subseteq >$, where $\subseteq$ is inclusion relation on the elements of A. 6 Marks

UNIT-III

5. a) Define (i) group (ii) abelian group and (iii) monoid. 6 Marks
   b) If f: $G \rightarrow H$ and g: $H \rightarrow K$ are homomorphisms, then prove that g O f: $G \rightarrow K$ defined by (g O f)(x) = g{f(x)}is a homomorphism 6 Marks

(OR)

6. a) Consider the semi group $(R^+,*)$ and (R, +) where R^+ is the set of all positive real numbers with usual multiplication * and + is the usual addition. Let the function f: $R^+ \rightarrow R$ be defined by $f(x) = \log_e x$ for any $x \in R^+$. Is f an isomorphism? Justify. 6 Marks
   b) Use mathematical induction to prove that $n^3 - n$ is divisible by 3 whenever n is a positive integer. 6 Marks

UNIT-IV

7. Find the generating functions for the following sequences. 12 Marks
   (i) $1^2, 2^2, 3^2$,..... (ii) 0, 2, 6, 12, 20, 30, 42..... (iii) $1^3, 2^3, 3^3$,.....

(OR)

8. Solve the recurrence relation $a_n - 7a_{n-1} + 16a_{n-2} - 12a_{n-3} = 0$, $n \geq 3$ with $a_o=1$, $a_1= 4$ and $a_2=8$. 12 Marks

UNIT-V

9. a) Distinguish between Euler circuits and Hamiltonian circuits. 6 Marks

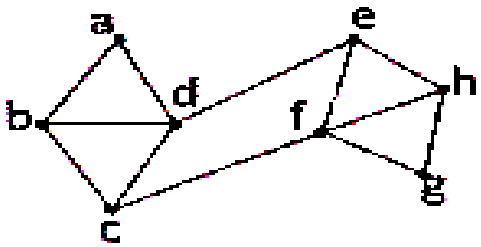
   b) Explain Breadth first search and Depth first search algorithm for a spanning tree. 6 Marks

(OR)

10. a) Explain briefly the following with example: 6 Marks

   (i) Hamiltonian graph. (ii) Eulerian graph.

   b) Define spanning tree of a graph. Find the DFS and BFS spanning trees for the following graph. 6 Marks



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC16) Supplementary Examinations July - 2019

COMPUTER ORGANIZATION

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Draw and explain the block diagram of a digital computer. 7 Marks
   b) Give a brief note on:
      i) Computer Organization. 1 Marks
      ii) Computer Design. 1 Marks
      iii) Computer Architecture. 3 Marks

(OR)

2. Simplify the following expressions.
   $F(A,B,C,D) = \sum(0,2,4,5,6,7,8,10,13,15)$
   i) Sum-of-products form. 6 Marks
   ii) Product-of-sums form. 6 Marks

UNIT-II

3. a) Explain the state diagram for sequential circuits. 6 Marks
   b) Design the combinational circuit for full-adder by using two half-adders. 6 Marks

(OR)

4. Compare flip-flops with the graphic symbol and characteristic table in detail. 12 Marks

UNIT-III

5. Explain in brief about the stack organization. 12 Marks

(OR)

6. a) Define the fields that we can found in the instruction format. Explain different instruction formats in detail. 6 Marks
   b) Define an interrupt. Explain different types of interrupts. 6 Marks

UNIT-IV

7. Summarize the common bus system of a basic computer with diagram. 12 Marks

(OR)

8. Construct the flowchart for computer operation. 12 Marks

UNIT-V

9. Assess the DMA transfer technique with the block diagram. 12 Marks

(OR)

10. Evaluate Input-Output-Processor (IOP) organization. 12 Marks

CODE No.:16MC10103 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. I Semester (SVEC16) Supplementary Examinations July - 2019

PROGRAMMING IN C

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Sketch the block diagram to create and run the C program in Turbo C.	6 Marks
	b)	Write about the structure of C program with suitable example.	6 Marks
		(OR)	
2.	a)	Define problem. How to solve the problem with the help of solving aspect considering one suitable example to define a problem?	8 Marks
	b)	Inscribe categories of data types in C.	4 Marks

UNIT-II

3.		Implement a program to read and write the elements in to matrix using nested loop.	12 Marks
		(OR)	
4.	a)	Code the transpose of a given n X n matrix A in Turbo C.	6 Marks
	b)	Sketch the exit loop control statement with a suitable program.	6 Marks

UNIT-III

5.		State the various types of functions depending upon categories of arguments and return statements with example.	12 Marks
		(OR)	
6.	a)	State which value is automatically assigned to those array elements that are not explicitly initialized with an example.	5 Marks
	b)	State various types of functions used in C.	7 Marks

UNIT-IV

7.		Specify how union can be declared with initialization and its usage with a suitable example.	12 Marks
		(OR)	
8.		Demonstrate the program to implement the nested structures with a suitable application.	12 Marks

UNIT-V

9.		Identify the types of files. Specify various types of operations that can be performed on files.	12 Marks
		(OR)	
10.		Illustrate various operations to access the records in a file with a suitable example.	12 Marks

CODE No.:16MC2BS01 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC16) Regular/Supplementary Examinations July - 2019

PROBABILITY AND STATISTICS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) State and prove the multiplication theorem of probability. 6 Marks
   b) In a factory, machine A produces 40% of the output and machine B produces 60% on the average, 9 items in1000 produced by A are defective and 1 item in 250 produced by B is defective. An item drawn at random from a day's output is defective. What is the probability that it was produced by A or B? 6 Marks

(OR)

2. a) State and prove Bayes' theorem. 6 Marks
   b) There are two bags A and B. A contains n white and 2 black balls, B contains 2 white and n black balls. One of the two bags is selected at random and 2 balls are drawn from it without replacement. If both the balls drawn are white and the probability that the bag was used to draw the balls is 6/7, find the value of n. 6 Marks

UNIT-II

3. The following data give the measurements of 10 samples each of size 5 in the production process taken in an interval of 2 hours. Calculate the sample means and ranges and draw the control charts for mean and range. 12 Marks

Sample Number	1	2	3	4	5	6	7	8	9	10
	49	50	50	48	47	52	49	55	53	54
Observed	55	51	53	53	49	55	49	55	50	54
measurements	54	53	48	51	50	47	49	50	54	52
X	49	46	52	50	44	53	53	53	47	54
	53	50	47	53	45	50	45	57	51	56

(OR)

4. a) Six dice are thrown 729 times. How many times do you except at least three dice to show a 5 or 6? 6 Marks
   b) In a test on 2000 electric bulbs, it was found that the life of a particular make was normally distributed with an average life of 2040 hours and standard deviation of 60 hours. Find the number of bulbs likely to burn for (i) more than 210 hours (ii) less than 190 hours (iii) more than 190 hours and but less than 2160 hours. 6 Marks

UNIT-III

5. The following data relate to the marks of 10 students in the internal test and the university examination for the maximum of 50 each. 12 Marks

Internal Marks	25	28	30	32	35	36	38	39	42	45
University Marks	20	26	29	30	25	18	26	35	35	46

Obtain the two regression equations and determine:

i) the most likely internal mark for the university mark of 25.
ii) the most likely university mark for the internal mark of 30.

(OR)

6. The equations of two regression lines obtained in a correlation analysis are: 12 Marks
$3X + 12Y = 19$, $3Y + 9X = 46$. Find:
i) coefficient of correlation.
ii) mean values of X and Y.
iii) the ratio of the coefficient of variability of X to that of Y.

UNIT-IV

7. a) A manufacturer claims that only 4% of his products are defective. A random sample of 500 were taken among which 100 were defective. Test the hypothesis at 0.05 level. 6 Marks

b) Test whether the 8% difference is a valid claim. (use 5%). In a sample of 1000 people in Maharashtra, 540 are rice eaters and the rest are wheat eaters. Can we assume that both rice and wheat are equally popular in this state at 1% LOS? 6 Marks

(OR)

8. a) Define: 6 Marks
i) Null and Alternative hypothesis. ii) Type-I error.
iii) Type -II error. iv) critical region.

b) The fatality rate of typhoid patients is believed to be 17.26%. In a certain year 640 patients suffering from typhoid were treated in a metropolitan hospital and only 63 patients died. Can you consider the hospital efficient? 6 Marks

UNIT-V

9. a) Pumpkins were grown under two experimental conditions. Two random samples of 11 and 9 pumpkins. Show the sample standard deviations of their weights as 0.8 and 0.5 respectively. Assuming that the weight distributions are normal, test hypothesis that the true variances are equal. 6 Marks

b) A die is thrown 264 times with the following results. Show that the die is biased. 6 Marks

No. appeared on the die	1	2	3	4	5	6
frequency	40	32	28	58	54	60

(OR)

10. a) A random samples of 10 bags of pesticides are taken whose weights are: 50, 49, 52, 44, 45, 48, 46, 45, 49, 45(in kgs). Test whether the average packing can be taken to be 50kgs. 6 Marks

b) The following table gives the number of aircraft accidents that occurred during the seven days of the week. Test whether the accidents are uniformly distributed over the week. 6 Marks

Days	Sun	Mon	Tues	Wed	Thu	Fri	Sat
No. of accidents	14	16	8	12	11	9	14

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. II Semester (SVEC16) Regular/Supplementary Examinations July - 2019

DATABASE MANAGEMENT SYSTEMS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Name different types of database end users. Discuss the main activities of each of them. 6 Marks

   b) Write short notes on data models, schemas and instances. 6 Marks

(OR)

2. What guidelines are to be followed in developing an ER diagram? Whether to use an attribute or an entity set, an entity or a relationship set, a binary or ternary relationship or aggregation. 12 Marks

UNIT-II

3. What is a view? Write the syntax for creating and destroying a view with suitable example. 12 Marks

(OR)

4. Define Primary key and Foreign key? Answer the following queries in SQL: 12 Marks
   i) Create a table EMP with only one column empno number(10).
   ii) Add salary number(10) column to the table EMP.
   iii) Give a validation saying that salary cannot be greater than 10,000.
   iv) Add a column mgr number(5) to the table EMP with foreign key constraint referencing empno of EMP table.
   v) Increase the length of empno column to 20.

UNIT-III

5. Consider the following relations: 12 Marks

   EMP (empno, ename, jobtitle, managerno, hiredate, sal, comm, deptno)
   DEPT (deptno, dname, loc)

   Answer the following queries in SQL:
   i) Find the Employees working in the department 10, 20, 30 only.
   ii) Find Employees whose names start with letter A or letter a.
   iii) Find Employees along with their department name.
   iv) Find Employees whose manager is KING.
   v) Find the Employees who are working in Smith's department
   vi) Find the Employees who get salary more than Allen's salary.

(OR)

6. Illustrate various anomalies caused by redundancy. Interpret the data by applying various normal forms to reduce redundancy. 12 Marks

UNIT-IV

7. a) What is a precedence graph or serializability graph? How is it related to conflict 6 Marks

serializability?

b) Discuss the relative merits of lock upgrades and lock downgrades. 6 Marks

(OR)

8. Define the term ACID properties. Apply strict two-phase locking technique for serial execution and interleaved execution. 12 Marks

UNIT-V

9. Describe in detail about B+ tree indexing method and rules for constructing B+ tree. 12 Marks

(OR)

10. Distinguish between ISAM and B+ tree structures. 12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC16) Regular/Supplementary Examinations July - 2019

DATA STRUCTURES

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Describe best case, average case and worst case efficiency of an algorithm. 6 Marks
   b) What is recursion? Design the recursive procedure to calculate n^{th} Fibonacci element. 6 Marks

(OR)

2. Convert the following postfix expressions into its corresponding infix and prefix expressions. 12 Marks
   i) A B C D E / * - F / G + +
   ii) 2 3 4 ^ ^ 9 3 / + 4 3 * 2 + 5 -
   iii) a b c d g / * + +

UNIT-II

3. a) List out the drawbacks of single linked lists. 4 Marks
   b) Demonstrate how to insert and delete an element from the double linked list. 8 Marks

(OR)

4. a) Implement circular linked list. 4 Marks
   b) Develop the routines to perform the following operations on the circular linked list. 8 Marks
   i) Insertion. ii) Deletion. iii) Traversing.

UNIT-III

5. a) Differentiate linear search algorithm with binary search algorithm. 4 Marks
   b) Explain the procedure to find whether the given element is in the list or not by using linear search technique. 8 Marks

(OR)

6. a) Discuss about sort stability and sort efficiency in detail. 8 Marks
   b) Analyze sorting algorithms. 4 Marks

UNIT-IV

7. a) Compare non recursive procedure for post order tree traversal technique. 8 Marks
   b) How to represent a binary tree using an array? 4 Marks

(OR)

8. a) Apply non recursive algorithm for pre order tree traversal. 7 Marks
   b) Define the terms node, degree, siblings, depth/height and level. 5 Marks

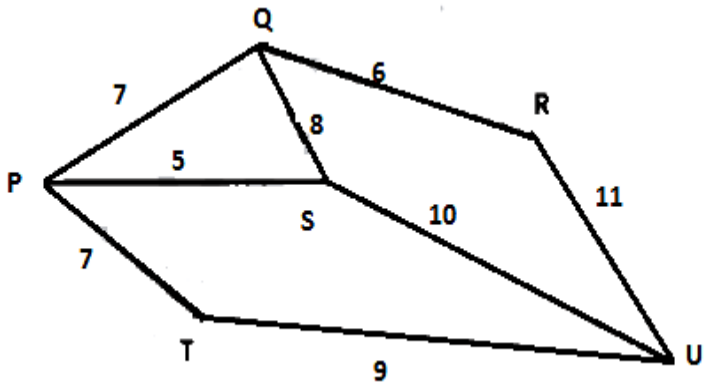
UNIT-V

9. a) Explain graph ADT. 6 Marks
   b) Analyze the importance of Euler circuits in the applications of graph. 6 Marks

(OR)

10. a) Implement BFS graph traversal algorithm with suitable example. 6 Marks

b) Find the minimum cost spanning tree for the given Graph G using Kruskal's algorithm. 6 Marks



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC16) Regular/Supplementary Examinations July - 2019

OBJECT ORIENTED PROGRAMMING THROUGH JAVA

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Define constructor. Classify the types of constructors with appropriate examples. 12 Marks

(OR)

2. a) Outline the role of access control specifiers to protect data in Java and also compare each of them. 8 Marks
   b) Examine the working process of garbage collector and brief about the importance of **gc()** method. 4 Marks

UNIT-II

3. Implement package concept to perform arithmetic operations. 12 Marks

(OR)

4. Demonstrate the forms of inheritance supported in Java. 12 Marks

UNIT-III

5. Will you state about Stack and ArrayList classes by simulating with an example? 12 Marks

(OR)

6. Illustrate Date and Calendar **util** classes with an example. 12 Marks

UNIT-IV

7. a) How to handle specific exceptions using multiple catch statements? 6 Marks
   b) What is Multithreading? What are the methods available in Java for inter-thread communication? Discuss with an example. 6 Marks

(OR)

8. Define Thread. Sketch the Life cycle of Thread with an example. 12 Marks

UNIT-V

9. How would you describe Layout Manager? Explain any three types of Layout Managers with suitable examples. 12 Marks

(OR)

10. Classify the swing components in Java and elaborate any four swing components. 12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC16) Regular/Supplementary Examinations July - 2019

SOFTWARE ENGINEERING

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Analyze requirement elicitation difficulties.	7 Marks
	b)	Mention benefits of prototyping in SDLC.	5 Marks
		(OR)	
2.	a)	Compare spiral model with water fall model and explain.	6 Marks
	b)	Illustrate requirements engineering process and requirements elicitation.	6 Marks

UNIT-II

3.	a)	Identify challenges related to component level design.	4 Marks
	b)	Reproduce user interface design steps with elicitation.	8 Marks
		(OR)	
4.		Emphasize golden rules along with suitable case study.	12 Marks

UNIT-III

5.		Elucidate formal technical reviews in detail.	12 Marks
		(OR)	
6.	a)	Differentiate formal and informal technical reviews.	5 Marks
	b)	What would be the result if you apply performance testing for web applications?	7 Marks

UNIT-IV

7.	a)	Discuss Concurrent Versions System tool used in software Industry.	6 Marks
	b)	Construct baselines of SCM with neat sketch and explain.	6 Marks
		(OR)	
8.	a)	Categorize various changes into classes in change management and explain in detail.	8 Marks
	b)	Assist how a web engineer and content developer are managing changes in web application configuration objects.	4 Marks

UNIT-V

9.	a)	Compare and contrast problem based estimation with process based estimation in estimation of a project.	6 Marks
	b)	How do we assess the consequences of a risk?	6 Marks
		(OR)	
10.	a)	Can you explain what is happening in software supportability?	5 Marks
	b)	What are the functionalities of Risk Mitigation, Monitoring and Management?	7 Marks

CODE No.:16MC2BS01 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC16) Supplementary Examinations January - 2019

PROBABILITY AND STATISTICS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) State and prove the addition theorem on probability for any three events. 6 Marks
   b) If two dice are thrown, what is the probability that the sum of the numbers on the dice is (i) greater than 7 and (ii) neither 8 nor 10? 6 Marks

(OR)

2. a) Define conditional probability and state Bayes' theorem. 6 Marks
   b) Of the three men, the chances that a politician, a businessman or an academician will be appointed as a Vice-Chancellor (V.C) of a University are 0.5, 0.3, 0.2 respectively. Probability that research is promoted by these persons if they are appointed as V.C are 0.3, 0.7, 0.8 respectively. 6 Marks
   i) Determine the probability that research is promoted.
   ii) If research is promoted, what is the probability that V.C is an academician?

UNIT-II

3. a) Obtain mean and variance of Binomial distribution. 6 Marks
   b) The probability of a man hitting a targets $\frac{1}{4}$; 6 Marks
   i) If he fires 7 times, what is the probability of his hitting the target at least twice?
   ii) How many times must he fire so that the probability of his hitting the target at least once is greater than $\frac{2}{3}$?

(OR)

4. a) Obtain mean and variance of Poisson distribution 6 Marks
   b) If X is a normal variate with mean 30 and standard deviation 5. Find the probabilities that (i) $26 \leq X \leq 40$ (ii) $X \geq 45$. 6 Marks

UNIT-III

5. Ten competitors in a musical contest were ranked by the three judges A, B and C in the following order: 12 Marks

Ranks by A	1	6	5	10	3	2	4	9	7	8
Ranks by B	3	5	8	4	7	10	2	1	6	9
Ranks by C	6	4	9	8	1	2	3	10	5	7

Using rank correlation method, discuss which pair of judges has the nearest approach to common liking in music.

(OR)

6. Compute the coefficient of correlation and the two lines of regression for the following data. 12 Marks

Price X:	14	16	17	18	19	20	21	22	23
Demand Y:	84	78	70	75	66	67	62	58	60

UNIT-IV

7. a) In 16 one hour test runs, the gasoline consumption of an engine averaged 16.4 gallons with a standard deviation of 2.1 gallons. Test the claim that the average gasoline consumption of this engine is 12.0 gallons per hour. 6 Marks

   b) A sample of heights of 6400 English men has a mean of 67.85 inches and standard deviation 2.56 inches, while another sample of heights of 1600, Australians has a mean of 68.55 inches and a standard deviation of 2.52 inches. Do the data indicate that Australians are on the average, taller than English men? 6 Marks

(OR)

8. a) A manufacturer claims that only 4% of his products are defective. A random sample of 500 were taken among which 100 were defective. Test the hypothesis at 0.05 level. 6 Marks

   b) Before an increase in excise duty on tea, 800 persons out of a sample of 1000 persons were found to be tea drinkers. After an increase in excise duty, 800 people were tea drinkers in a sample of 1200 people. Using standard error of proportion, state whether there is a significant decrease in the consumption of tea after the increase in excise duty? 6 Marks

UNIT-V

9. a) Two horses A and B were tested according to the time (in seconds) to run a particular track with the following results. 6 Marks

Horse-A	28	30	32	33	33	29	34
Horse-B	29	30	30	24	27	29	-

   Test whether the two horses have the same running capacity. (use 5% LOS)

   b) Among 64 offsprings of a certain cross between guinea pigs, 34 were red, 10 were black and 20 were white. According to the genetic model, these numbers should be in the ratio 9:3:4. Are the data consistent with the model at 5% level? 6 Marks

(OR)

10. a) A pair of dice are thrown 360 times and the frequency of each sum is indicated below: 6 Marks

Sum	2	3	4	5	6	7	8	9	10	11	12
frequency	8	24	35	37	44	6	51	42	26	14	-

   Would you say that the dice are fair on the basis of the chi-square test at 5% level of significance?

   b) The weights of 10 people of a locality are found to be 70, 67, 62, 68, 61, 68, 70, 64, 64, kilograms. Is it reasonable to believe that the average weights of the people of locality is greater than 64 kg? Test at 5% level of significance. 6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC16) Supplementary Examinations January - 2019

DATABASE MANAGEMENT SYSTEMS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. With a neat diagram, explain three-schema architecture of database system. 12 Marks

(OR)

2. State and explain entity types, entity sets, attributes and keys. 12 Marks

UNIT-II

3. What is Structured Query Language? Specify the integrity constraints in SQL with example. 12 Marks

(OR)

4. Draw an E-R diagram for banking enterprise system and identify the derived and composite attributes, the strong and weak entity sets and relationships. 12 Marks

UNIT-III

5. What is the relationship exists between 3NF and BCNF. Distinguish 3NF versus BCNF. Consider any one relational schema which is in 2NF and convert it into BCNF. 12 Marks

(OR)

6. Explain the following in SQL with examples. 12 Marks
   i) Insert command. ii) Delete command.
   iii) Update command. iv) Trigger concepts.

UNIT-IV

7. Discover the steps used in ARIES when recovering the system from crash. Inspect the goal of analysis phase, the redo phase, the undo phase. 12 Marks

(OR)

8. What are ACID properties? Explain the log based recovery techniques. 12 Marks

UNIT-V

9. What is meant by RAID technology? Explain the various RAID levels with a neat sketch. 12 Marks

(OR)

10. Construct the Indexed sequential access method Index structure with a neat sketch and explain with a suitable example. 12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC16) Supplementary Examinations January - 2019

DATA STRUCTURES

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Measure the time complexity of an algorithm with suitable example. 8 Marks
   b) Write a 'C' program using recursion to find GCD of two numbers. 4 Marks

(OR)

2. a) What is pseudocode? Justify usage of pseudocode as a problem solving tool. 4 Marks
   b) Translate following infix expression into its equivalent postfix expression: 8 Marks
   (a + b) + (c + d) - e * f and explain.

UNIT-II

3. Write a 'C' program to add two polynomials using linked list representation. 12 Marks

(OR)

4. a) Plan the procedures to insert and delete an element from dequeue. 8 Marks
   b) Write about simulation. 4 Marks

UNIT-III

5. Write a 'C' program to sort the given elements using Merge Sort Technique. Discuss its time complexity. 12 Marks

(OR)

6. Develop a 'C' program to sort the given elements using Quick Sort Technique. Discuss its time complexity. 12 Marks

UNIT-IV

7. a) Construct non recursive algorithm for inorder tree traversal technique. 8 Marks
   b) List various applications of trees. 4 Marks

(OR)

8. Illustrate the insertion operation on AVL tree with suitable example. 12 Marks

UNIT-V

9. a) Write about Hamiltonian Circuits. 6 Marks
   b) List and explain about basic operations of graphs. 6 Marks

(OR)

10. Explain the Dijkstras algorithm for shortest path problem with an example. 12 Marks

CODE No.:16MC20103 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. II Semester (SVEC16) Supplementary Examinations January - 2019

OBJECT ORIENTED PROGRAMMING THROUGH JAVA

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Write a program to find the smallest integer in a list of integers. Assume that the first value read specifies the number of values input to be given by the user. 6 Marks
   b) What is Platform Independent? How does Java achieve Platform independence? 6 Marks

(OR)

2. a) How would you categorize the operators in Java to meet specific need? 6 Marks
   b) Define Constructor Overloading. Write a Java program to implement Constructor Overloading. 6 Marks

UNIT-II

3. What way would you design Method Overriding with suitable Java code? 12 Marks

(OR)

4. How can you compare and contrast Classes and Interfaces in Java? 12 Marks

UNIT-III

5. Discuss about the following: 12 Marks
   i) Iterator Interface ii) ListIterator Interface iii) Enumeration Interface

(OR)

6. Discuss in detail about Serialization with an example. 12 Marks

UNIT-IV

7. a) Solve the producer consumer problem by illustrating the concept of multithreading. 8 Marks
   b) Write a short notes on chained exceptions. 4 Marks

(OR)

8. a) How are exceptions handled in Java? Elaborate with suitable example. 9 Marks
   b) Brief about the importance of finally in exception handling with an example. 3 Marks

UNIT-V

9. a) Write short notes on the following: 6 Marks
   i) Working with Frame windows ii) Introduction to Swings
   b) What is an adapter class? Explain its purpose and functionality. 6 Marks

(OR)

10. Explain how to handle keyboard events in Java with suitable example. 12 Marks

CODE No.:16MC3BS01 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC16) Regular/Supplementary Examinations January - 2019

OPERATIONS RESEARCH

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Represent mathematical form of a linear programming problem. CO1 4 Marks
   b) Solve the following LPP. CO3 8 Marks

Maximize $Z = 40X + 25Y + 50Z$

Subject to the constraints:

$$X + 2Y + Z \leq 36$$
$$2X + Y + 4Z \geq 60$$
$$2X + 5Y + Z = 45$$
$$X, Y, Z \geq 0$$

(OR)

2. a) List and explain different phases of Operations Research. CO1 5 Marks
   b) Explain Big -M method to solve a linear programming problem. CO1 7 Marks

UNIT-II

3. Determine : i) job assignment. CO3 12 Marks
   ii) the minimum cost of assignment for using the following cost matrix.

		1	2	3	4	5
Machine	A	10	3	3	2	8
	B	9	7	8	2	7
	C	7	5	6	2	4
	D	3	5	8	2	4
	E	9	10	9	6	10

(OR)

4. A Travelling sales man has to visit 5 cities. He wishes to start from a particular city, visit each city once and then return to his starting point. Cost of going from one city to another is shown below. Find the least cost route. CO3 12 Marks

From City \ To City	A	B	C	D	E
A	∞	4	10	14	2
B	12	∞	6	10	4
C	16	14	∞	8	14
D	24	8	12	∞	10
E	2	6	4	16	∞

UNIT-III

5. The probability of failure (P_n) just before age **n** years is shown below. If individual replacement costs Rs.12.50 and group replacement costs Rs.3.00 per item. Find the optimal replacement policy. CO2 12 Marks

Year (n)	1	2	3	4	5
P_n	0.1	0.2	0.25	0.3	0.15

(OR)

6. A truck has been purchased at a cost of Rs.1,60,000. The value of the truck is depreciated in first three years by Rs. 20,000 each year and Rs.16,000 per year thereafter. Its maintenance and operating costs for the first three years are Rs. 16,000, Rs. 18,000 and Rs. 20,000 in the order and increase by Rs. 4,000 every year. Assuming an interest rate of 10% find the economic life of the truck. CO2 12 Marks

UNIT-IV

7. Suppose that the sales of a particular item per day is Poisson with mean 5, then generate 20 days of sales by Monte-Carlo method. CO4 12 Marks

(OR)

8. Using the principle of dominance, solve the following game. CO3 12 Marks

55	53	32	62
40	30	74	50
57	54	44	53
54	54	72	56

UNIT-V

9. The demand for a particular item is 18,000 units per year. The holding cost per unit is Rs.1.20 per year and the cost of one procurement is Rs.400. No shortages are allowed and the replacement rate is instantaneous. Determine: CO3 12 Marks

   i) Optimum order quantity.
   ii) Number of orders per year.
   iii) Time between orders.
   iv) Total cost per year when the cost of one unit is Rs.1.

(OR)

10. The following table shows the jobs of a network along with their time estimate. The time estimates are in days: CO5 12 Marks

Job	1-2	1-6	2-3	2-4	3-5	4-5	5-8	6-7	7-8
a	3	2	6	2	5	3	1	3	4
m	6	5	12	5	11	6	4	9	19
b	15	14	30	8	17	15	7	27	28

(i) Draw the project network.
(ii) Find the critical path.
(iii) Find the probability that the project is completed in 31 days.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. III Semester (SVEC16) Regular/Supplementary Examinations January - 2019

ORGANIZATIONAL BEHAVIOR AND HUMAN RESOURCE MANAGEMENT

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	Give the Henry Fayal's principles to management in detail.	CO1	12 Marks
	(OR)		
2.	Define management and explain it basic concepts.	CO1	12 Marks

UNIT-II

3.	Illustrate the approaches to Organizational Behavior.	CO2	12 Marks
	(OR)		
4.	"Role of Organizational Behavior in individual development." Discuss the concept in brief.	CO3	12 Marks

UNIT-III

5.	What is management change? Describe in detail.	CO1	12 Marks
	(OR)		
6.	What do you understand the concept of Leadership?	CO5	12 Marks

UNIT-IV

7.	Differentiate between job analysis and job design.	CO3	12 Marks
	(OR)		
8.	Explain the factors affecting HRP.	CO1	12 Marks

UNIT-V

9.	"How do you overcome the barriers of effective selection". Explain.	CO2	12 Marks
	(OR)		
10.	Outline the essentials of designing training programme.	CO6	12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC16) Regular/Supplementary Examinations January - 2019

COMPUTER NETWORKS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Highlight the usage of multiplexing. Mention the significance of multiplexing in networks.	CO3	6 Marks
	b)	What are the reasons for using layered approach?	CO2	6 Marks
		(OR)		
2.	a)	Design complexity can be reduced by organizing networks as a stack of layers. Justify the statement.	CO2	6 Marks
	b)	Distinguish between coaxial cable and fiber optics in guided transmission media.	CO4	6 Marks

UNIT-II

3.	a)	Why parity checks and check sum are used? Explain parity checks and check summing methods with an example.	CO3	6 Marks
	b)	Compare Slotted Aloha and Pure Aloha random access protocols.	CO2	6 Marks
		(OR)		
4.	a)	Write short notes on error correction mechanism.	CO1	4 Marks
	b)	Which protocol can be chosen to resolve the contention for the channel without collisions during the contention period? Explain.	CO4	8 Marks

UNIT-III

5.	a)	Explain hierarchical routing with an example. Mention its advantages and disadvantages.	CO4	8 Marks
	b)	State the attributes on which networks differ.	CO6	4 Marks
		(OR)		
6.	a)	Distinguish between Virtual circuit and Datagram subnets.	CO3	6 Marks
	b)	Sketch the IPV4 packet format and explain the importance of IP protocol in the internet.	CO2	6 Marks

UNIT-IV

7.	a)	Tabulate the RTP header format with a neat sketch.	CO2	7 Marks
	b)	How error control and flow control mechanisms are achieved in transport layer.	CO4	5 Marks
		(OR)		
8.	a)	Compare and contrast TCP and UDP.	CO2	4 Marks
	b)	Write short notes on TCP service model.	CO1	3 Marks
	c)	Define Marshalling. Elucidate the process of remote procedure call with a neat diagram.	CO4	5 Marks

UNIT-V

9.		What is an e-mail? Recall various functions of e-mail software system.	CO6	12 Marks
		(OR)		
10.	a)	List the services provided by a user agent. Explain.	CO1	6 Marks
	b)	Interpret the role of Message Transfer agent. Explain.	CO2	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC16) Regular/Supplementary Examinations January - 2019

DATA WAREHOUSING AND DATA MINING

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Sketch and explain data warehouse architecture.	CO3	7 Marks
	b)	Briefly outline on Sourcing, Acquisition, Cleanup and Transformation tools with respect to data warehouse.	CO1	5 Marks
		(OR)		
2.	a)	Mention the characteristics of data warehouse.	CO1	4 Marks
	b)	Construct and explain data warehouse architecture and its components.	CO3	8 Marks

UNIT-II

3.		List various schemas for multidimensional databases. Construct Star and Snowflake schemas with suitable example.	CO3	12 Marks
		(OR)		
4.	a)	Elaborate on major issues of data mining.	CO1	6 Marks
	b)	Sketch and explain multidimensional Snowflake schema with suitable example.	CO3	6 Marks

UNIT-III

5.		Enumerate the steps needed in finding frequent item sets without candidate generation (FP-growth) with an example.	CO3	12 Marks
		(OR)		
6.		Apply Apriori algorithm in finding frequent item sets using super market data set as an example.	CO4	12 Marks

UNIT-IV

7.		What is the purpose of classification? How classification is performed using decision tree induction by considering student training data set for "buys computer".	CO4	12 Marks
		(OR)		
8.	a)	Illustrate how classification is done using Decision Tree Induction classification method.	CO3	7 Marks
	b)	Apply K-means clustering technique by using suitable dataset.	CO4	5 Marks

UNIT-V

9.		How text data is analyzed and information retrieval process is performed in text mining.	CO4	12 Marks
		(OR)		
10.		Write a brief note on web mining. Illustrate different mining methods used in web database.	CO4	12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. III Semester (SVEC16) Regular/Supplementary Examinations January - 2019

OBJECT ORIENTED ANALYSIS AND DESIGN

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		Define the following: i) Usecase. ii) Active class. iii) Interface. iv) Collaboration. v) Node. vi) Component.	CO1	12 Marks
		(OR)		
2.		State and explain the classification of things with UML notation.	CO1	12 Marks

UNIT-II

3.	a)	Illustrate the following modeling issues with class diagrams. i) Modeling simple collaborations. ii) Modeling logical database schema.	CO3	8 Marks
	b)	Apply various steps to model object structures.	CO3	4 Marks
		(OR)		
4.	a)	List and explain the uses of class diagram.	CO2	6 Marks
	b)	Adapt the steps to reverse engineer a class diagram.	CO2	6 Marks

UNIT-III

5.	a)	How to model flows of control by organization in UML?	CO3	7 Marks
	b)	Enumerate the modeling techniques to model usecase.	CO2	5 Marks
		(OR)		
6.	a)	Define semantic equivalence between two kinds of interaction diagrams.	CO1	4 Marks
	b)	What are the contents, common properties and common uses of usecase diagrams?	CO1	8 Marks

UNIT-IV

7.	a)	Define event and signal. What are the four kinds of events modeled by UML?	CO1	6 Marks
	b)	Enumerate the steps of forward engineering and reverse engineering of an activity diagram.	CO2	6 Marks
		(OR)		
8.		Infer the states that are associated with borrowing a book from a library system. Draw the state chart diagram that explains various states of a book during the processing.	CO5	12 Marks

UNIT-V

9.	a)	Explain how forward engineering and reverse engineering can be done using a component diagram.	CO1	4 Marks
	b)	Draw a well structured component diagram for illustrating a simple application of client-server system and explain the properties.	CO5	8 Marks
		(OR)		
10.	a)	Specify the steps to reverse engineer a deployment diagram.	CO2	4 Marks
	b)	Identify the steps to model a physical database schema.	CO2	4 Marks
	c)	Identify various properties of a component diagram.	CO1	4 Marks

CODE No.:16MC3HS01 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC16) Supplementary Examinations July - 2019

ORGANIZATIONAL BEHAVIOR AND HUMAN RESOURCE MANAGEMENT

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	Discuss the systems approach to management in brief.	CO2	12 Marks
	(OR)		
2.	Elaborate the concepts of scientific management.	CO1	12 Marks

UNIT-II

3.	Explain the managerial implications of individual behavior.	CO2	12 Marks
	(OR)		
4.	Give the reasons for individual differences.	CO5	12 Marks

UNIT-III

5.	Define leadership and elaborate any two styles of leadership.	CO1	12 Marks
	(OR)		
6.	Explain in detail the concept of attitude in detail.	CO2	12 Marks

UNIT-IV

7.	Define Human Resource Management and write about its functions.	CO1	12 Marks
	(OR)		
8.	Elaborate the nature and importance of Human Resource Planning.	CO4	12 Marks

UNIT-V

9.	Differentiate between selection and recruitment processes.	CO2	12 Marks
	(OR)		
10.	Elaborate the training process in detail.	CO1	12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC16) Supplementary Examinations July - 2019

COMPUTER NETWORKS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Demonstrate ISO/OSI reference model with a neat sketch.	CO2	7 Marks
	b)	What is a primitive? List the service primitives for implementing a connection-oriented service.	CO2	5 Marks
		(OR)		
2.	a)	Define Topology. Classify various topologies used to construct different networks to cater the needs of users.	CO2	8 Marks
	b)	Mention the social issues of networks applications.	CO6	4 Marks

UNIT-II

3.	a)	What is channel allocation problem? Mention the types of channel allocation.	CO1	6 Marks
	b)	List and explain the design issues of data link layer.	CO1	6 Marks
		(OR)		
4.	a)	What is the remainder obtained by dividing $\mathbf{x^7+x^5+1}$ by the generator polynomial $\mathbf{x^3+1}$?	CO5	6 Marks
	b)	Describe the role of ALOHA in multiple access protocols.	CO2	6 Marks

UNIT-III

5.		What is Service Level Agreement (SLA)? How Quality of Service is achieved through Traffic shaping, depict with an example?	CO5	12 Marks
		(OR)		
6.	a)	Differentiate between ARP and RARP.	CO2	5 Marks
	b)	Mention the characteristics of Routing algorithms.	CO1	7 Marks

UNIT-IV

7.		Differentiate the TCP header and the UDP header formats. Identify the fields in the TCP header that are not part of the UDP header. Give the reasons for each missing field.	CO2	12 Marks
		(OR)		
8.		Elaborate the terms: i) The TCP Service Model. ii) The TCP Protocol. iii) TCP Connection Establishment.	CO4	12 Marks

UNIT-V

9.		Describe the addressing system used by SMTP. Explain the SMTP protocol.	CO2	12 Marks
		(OR)		

10. Sketch and explain the message formats supported by e-mail. CO3 12 Marks

CODE No.:16MC30102 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC16) Supplementary Examinations July - 2019

DATA WAREHOUSING AND DATA MINING

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Construct and explain the 2-tier architecture of data warehouse.	CO3	8 Marks
	b)	Elucidate about sourcing, acquisition, cleanup and transformation tools.	CO1	4 Marks

(OR)

2.	a)	What is Metadata? Describe the types of Metadata.	CO1	6 Marks
	b)	Write short notes on Data Warehouse Administration and Management.	CO1	6 Marks

UNIT-II

3.		List out data mining functionalities. Give examples of each data mining functionalities, using a real-life database with which you are familiar.	CO1	12 Marks

(OR)

4.	a)	Sketch and explain KDD process in Data Mining.	CO3	6 Marks
	b)	Construct a multidimensional Star schema with suitable example.	CO3	6 Marks

UNIT-III

5.	a)	Use the techniques of Min-Max normalization and z-score normalization to solve the problem for normalizing the data: 200, 300, 400, 600 and 1000 by setting min=0 and max=1.	CO4	5 Marks
	b)	Adopt data integration techniques to handle redundant and inconsistent data.	CO5	7 Marks

(OR)

6. A database has six transactions. Let min-sup=40% and min-conf=80% CO2 12 Marks

	List of Transactions
001	T1,T3,T5,T7
002	T1,T5,T6,T7
003	T6,T7
004	T2,T3,T6,T7
005	T8,T1,T6
006	T2,T5,T8

i) Find all frequent item sets using Apriori algorithm.
ii) List all the strong association rules.

UNIT-IV

7. Use Bayesian classification method on weather nominal data set for an optimal decision making. CO3 12 Marks

(OR)

8.	a)	Describe major issues in classification and prediction.	CO1	4 Marks
	b)	Elaborate on types of data in cluster analysis.	CO1	8 Marks

UNIT-V

9.		Elucidate the mechanism used in mining the Text databases.	CO2	12 Marks

(OR)

10.		How text data is analyzed and information retrieval process is performed in Text mining. Mention various text mining approaches.	CO4	12 Marks

CODE No.:16MC30103 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC16) Supplementary Examinations July - 2019

OBJECT ORIENTED ANALYSIS AND DESIGN

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Enumerate salient features of object orientation. Explain briefly.	CO1	6 Marks
	b)	Enumerate the steps to model the distribution of responsibilities in a system.	CO3	6 Marks
		(OR)		
2.		Draw software architecture with explanation. Represent 4+1 view model of systems architecture.	CO3	12 Marks

UNIT-II

3.	a)	Illustrate the contents in class diagrams.	CO2	6 Marks
	b)	Explain the use of forward engineering and reverse engineering class diagrams.	CO1	6 Marks
		(OR)		
4.		Draw class diagram for a school information system and explain in detail.	CO5	12 Marks

UNIT-III

5.	a)	What are the properties and common uses of sequence diagrams and collaboration diagrams?	CO1	6 Marks
	b)	Explain the steps to model the context of a system.	CO1	6 Marks
		(OR)		
6.		Explain the following with regard to interaction diagrams. i) Object life line. ii) <<create>> and <<destroy>> messages. iii) Focus of control. iv) Dewey decimal numbering. v) Nesting of tours of control. vi) Semantic equivalence.	CO1	12 Marks

UNIT-IV

7.	a)	Differentiate between a process and a thread.	CO2	3 Marks
	b)	Identify standard stereotypes that can be applied to active class.	CO1	3 Marks
	c)	Model the behavior of an ATM machine with the help of a state chart diagram.	CO4	6 Marks
		(OR)		
8.		Compare the following: i) Event *vs* Signal. ii) Sequential substates *vs* Concurrent substates.	CO2	12 Marks

UNIT-V

9.	a)	Define component. What are the differences between components and classes? How are components and interfaces related?	CO2	6 Marks
	b)	Apply standard stereotypes to components with suitable example.	CO1	6 Marks
		(OR)		
10.	a)	Define node. Contrast node with components.	CO2	4 Marks
	b)	Illustrate modeling mechanisms for a fully distributed system.	CO2	4 Marks
	c)	Explain active object in library system.	CO1	4 Marks

CODE No.:16MC40101 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC16) Regular/Supplementary Examinations July - 2019

BIG DATA ANALYTICS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		How the Hadoop can be compared with other systems?	CO2	12 Marks
		(OR)		
2.	a)	Explain in detail about Big data analysis.	CO1	6 Marks
	b)	Write short notes on the following: i) Slicing and dicing ii) Basic monitoring iii) Anomaly identification	CO1	6 Marks

UNIT-II

3.		How to perform scaling out for the mapreduce data flow with a single and multiple tasks?	CO2	12 Marks
		(OR)		
4.		How data integrity can achieve in HDFS?	CO2	12 Marks

UNIT-III

5.		List out various GenericOption parser and tool runner options with its description.	CO2	12 Marks
		(OR)		
6.		Construct a shuffle and sort in mapreduce, with a neat sketch both map side and reduce side.	CO2	12 Marks

UNIT-IV

7.		Sketch the three-step Kerberos ticket exchange protocol with explanation.	CO2	12 Marks
		(OR)		
8.		Explain in detail about the following: i) HDFS ii) YARN	CO1	12 Marks

UNIT-V

9.	a)	Implement scalars and matrices with a suitable example in R programming.	CO5	6 Marks
	b)	Codify to explain character strings in the R programming language.	CO5	6 Marks
		(OR)		
10.		Define recursive lists. With a suitable example, demonstrate accessing list components and values.	CO4	12 Marks

CODE No.:16MC40102 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. IV Semester (SVEC16) Regular/Supplementary Examinations July - 2019

LINUX PROGRAMMING

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		"Unix operating system provides more security than any other" Justify.	CO2	12 Marks
		(OR)		
2.		Elaborate various disk and backup utilities available in Linux.	CO1	12 Marks

UNIT-II

3.	a)	Define Unix shell. Explain shell environment in Linux.	CO1	6 Marks
	b)	How to remove duplicate lines from a file using sort command?	CO5	6 Marks
		(OR)		
4.		Implement a shell script which receives two filenames as arguments. It should check whether two file's contents are same or not. If they are same then second file should be deleted. 'cmp' command to compare files.	CO5	12 Marks

UNIT-III

5.		Distinguish the fgetc and getc system calls.	CO2	12 Marks
		(OR)		
6.	a)	What is the difference between home directory and working directory?	CO2	6 Marks
	b)	Elaborate the file attributes in Linux.	CO1	6 Marks

UNIT-IV

7.		How do you terminate an ongoing process? Discuss in detail.	CO3	12 Marks
		(OR)		
8.		How does we use sleep () system call for processes in Linux.	CO5	12 Marks

UNIT-V

9.		Differentiate IPC methods such as Message queues, Shared Memory and Semaphores.	CO2	12 Marks
		(OR)		
10.		Explain various socket system calls used for UDP protocol.	CO1	12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC16) Regular/Supplementary Examinations July - 2019

WEB PROGRAMMING

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Identify and explain any five HTML form controls that are required for obtaining user details for a typical online user registration process.	CO4	8 Marks
	b)	Analyze the importance of AJAX.	CO2	4 Marks
		(OR)		
2.		Explain HTML form control elements in detail with example.	CO1	12 Marks

UNIT-II

3.		Write a program to retrieve the elements and attributes of the XML document and display the student marks statement in a table format using XSLT.	CO4	12 Marks
		(OR)		
4.		Create an XML document to store EmpID, EmpName, Address and DOB details. Implement a DTD to validate the document.	CO5	12 Marks

UNIT-III

5.		Explain the differences between GenericServlet and HttpServlet with suitable examples.	CO2	12 Marks
		(OR)		
6.		Differentiate ServletContext and ServletConfig with suitable programs.	CO2	12 Marks

UNIT-IV

7.		Analyze the usage of implicit objects in JSP with suitable examples.	CO2	12 Marks
		(OR)		
8.		With a neat diagram, analyze life cycle of JSP with necessary steps and suitable example.	CO2	12 Marks

UNIT-V

9.	a)	Write a PHP program to insert employee information such as empid, name, address and phoneno into MYSQL database table.	CO4	6 Marks
	b)	Label the advantages of PHP and MYSQL.	CO1	6 Marks
		(OR)		
10.		Elucidate files in PHP. Implement files in PHP to read and write the contents of the file.	CO5	12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC16) Regular/Supplementary Examinations July - 2019

INTERNET OF THINGS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Brief about the "Things in IoT" and mention various IoT devices.	CO1	6 Marks
	b)	Identify various architectural constraints of REST-based communication APIs.	CO2	6 Marks
		(OR)		
2.		Draw the IoT protocols stack and explain the functionality of each layer and associated protocols to serve the purpose.	CO2	12 Marks

UNIT-II

3.	a)	What way would you design the pseudocode for sending an email on switch press with Raspberry Pi?	CO5	7 Marks
	b)	Can you construct a model that would generate noise maps in cities?	CO4	5 Marks
		(OR)		
4.		Elaborate on the application of IoT in Retail and Logistics.	CO4	12 Marks

UNIT-III

5.	a)	How would you classify the types of sensor nodes?	CO2	8 Marks
	b)	What facts would you select to show need of DNS?	CO5	4 Marks
		(OR)		
6.		What is the role of YANG in IoT system? Illustrate with an example.	CO3	12 Marks

UNIT-IV

7.		How would you define the service specifications in the IoT system? Illustrate with an example.	CO3	12 Marks
		(OR)		
8.		Describe the following for weather monitoring IoT system: i) Domain model. ii) Information model. iii) Deployment design.	CO2	12 Marks

UNIT-V

9.		Demonstrate the mechanism in setting up of a Hadoop Cluster.	CO3	12 Marks
		(OR)		
10.	a)	Identify and explain the key components of YARN.	CO2	6 Marks
	b)	Discuss the Hadoop MapReduce Next Generation (YARN) job execution.	CO2	6 Marks

CODE No.:16MC40108 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC16) Regular/Supplementary Examinations July - 2019

SOFTWARE PROJECT MANAGEMENT

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	List the general quality improvements with a modern process over conventional process. Explain the key practices to improve software quality.	CO2	6 Marks
	b)	Describe the three generations of basic technology advancement in tools, components and processes.	CO1	6 Marks

(OR)

2.	a)	Analyze the reasons of why conventional software management does not perform satisfactorily.	CO2	8 Marks
	b)	Mention the ways of achieving better economics in software.	CO1	4 Marks

UNIT-II

3.	a)	Define artifact. Write in detail about engineering artifacts.	CO1	8 Marks
	b)	List the principles of modern software management.	CO2	4 Marks

(OR)

4.		Indicate the primary objectives and essential activities of elaboration and construction phases.	CO1	12 Marks

UNIT-III

5.	a)	Illustrate the work break down structure to meet specific needs of software project development.	CO3	6 Marks
	b)	Specify the process of Iteration workflows of a software development project.	CO1	6 Marks

(OR)

6.	a)	Conventional WBS's are prematurely structured around the product design. Justify.	CO3	5 Marks
	b)	Discuss the major milestones for the development of software project.	CO1	7 Marks

UNIT-IV

7.		How would you map project-level roles and responsibilities in a default project organization?	CO5	12 Marks

(OR)

8.		Adapt appropriate project environment tools which are critical for the success of modern iterative development process. Elaborate on Change Management components.	CO5	12 Marks

UNIT-V

9.	Evaluate the critical dimensions of tailoring the software development process.	CO4	12 Marks

(OR)

10.	Apply seven core metrics with their perspectives and purpose to manage a modern software process.	CO5	12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC16) Supplementary Examinations January - 2019

BIG DATA ANALYTICS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		Define Big Data Analytics. Distinguish traditional RDBMS and Map Reduce.	CO2	12 Marks
		(OR)		
2.		Distinguish between operationalized analytics and Monetizing Analytics	CO2	12 Marks

UNIT-II

3.	a)	To extract temperature from Weather dataset perform analysis of the data with Unix tools.	CO6	6 Marks
	b)	Define map file. Identify various map file variants.	CO2	6 Marks
		(OR)		
4.		Explain the following interfaces in Hadoop file systems. i) HTTP ii) C iii) NFS iv) Fuse	CO1	12 Marks

UNIT-III

5.		Specify different input formats that Hadoop provide to process text.	CO3	12 Marks
		(OR)		
6.		Implement with a small test data set. How to run on a cluster in Hadoop?	CO4	12 Marks

UNIT-IV

7.		Distinguish between map side joins and reduce side joins.	CO2	12 Marks
		(OR)		
8.		Adapt various Hadoop configuration files along with a format and description.	CO4	12 Marks

UNIT-V

9.		How matrices and arrays behave as vectors. Justify with a suitable example using R language.	CO5	12 Marks
		(OR)		
10.		Create lists and perform general list operations on it in R programming.	CO5	12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC16) Supplementary Examinations January - 2019

WEB PROGRAMMING

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Explain following tags used to construct web form: i) FORM. ii) INPUT. iii) SELECT.	CO1	6 Marks
	b)	Develop an HTML page that displays three hyperlinks to different web pages. The web pages should open in a new window when the user clicks on the hyperlinks.	CO3	6 Marks
		(OR)		
2.	a)	Write a Java Script program to validate HTML form controls for Email registration form.	CO5	8 Marks
	b)	Describe the structure of HTML program.	CO1	4 Marks

UNIT-II

3.	a)	What is a namespace? Justify how a namespace is created with a relevant example.	CO3	6 Marks
	b)	Define Document Type Definition (DTD). Show how an XML DTD can be created.	CO1	6 Marks
		(OR)		
4.	a)	Codify for the creation of XML document making use of XML parser.	CO3	6 Marks
	b)	What is XPath? Write an XML program that uses any two node set functions.	CO3	6 Marks

UNIT-III

5.		Write short notes on Java Database Connectivity. Illustrate with an example.	CO1	12 Marks
		(OR)		
6.	a)	Sketch the life cycle of a servlet with a necessary illustration.	CO3	6 Marks
	b)	What is a session? Implement how client state is maintained using session with suitable example.	CO4	6 Marks

UNIT-IV

7.		Make use of any six JSP standard action tags and implement them in JSP.	CO5	12 Marks
		(OR)		
8.		With a neat diagram, analyze life cycle of JSP with necessary steps and suitable example.	CO2	12 Marks

UNIT-V

9.		Write PHP code to retrieve the Form Data using $_GET[], $_POST[] and $_REQUEST[] function.	CO5	12 Marks
		(OR)		
10.	a)	Develop a PHP that uses user defined function to calculate factorial of a given number.	CO3	6 Marks
	b)	Write a PHP program to retrieve employee information such as empid, name, address and phoneno from MYSQL database table.	CO4	6 Marks

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CODE No.:16MT10501 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular/Supplementary Examinations January - 2019

ADVANCED COMPUTER NETWORKS

[Computer Science, Computer Networks and Information Security]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	What is ATM protocol architecture? Distinguish between ATM cells at the user-network interface and network-node interface.	8 Marks
	b)	Summarize the features of Classful IP addressing.	4 Marks
		(OR)	
2.	a)	Compare circuit switching and packet switching techniques.	6 Marks
	b)	What are the different types of delays experienced by the packet along the path between source and destination? Explain.	6 Marks

UNIT-II

3.	a)	Explain parity checks and check summing methods.	6 Marks
	b)	Compare Slotted Aloha and Pure Aloha random access protocols.	6 Marks
		(OR)	
4.	a)	Describe Address Resolution Protocol (ARP).	6 Marks
	b)	Write the properties of Link - Layer Switching. Compare Switch and Router.	6 Marks

UNIT-III

5.	a)	Compare the TCP header and the UDP header. List the fields in the TCP header that are not part of the UDP header. Give the reason for each missing field.	8 Marks
	b)	What is the maximum and minimum size of the TCP header?	4 Marks
		(OR)	
6.		Explain in detail about SMTP protocol.	12 Marks

UNIT-IV

7.	a)	Explain major challenges in mobile IP.	6 Marks
	b)	Sketch the header format of mobile IP registration.	6 Marks
		(OR)	
8.	a)	Explain mobility management in cellular networks.	6 Marks
	b)	Differentiate between forward link and reverse link in CDMA-based mobile wireless.	6 Marks

UNIT-V

9.	a)	Describe DSDV packet process algorithm.	6 Marks
	b)	Write the applications of ad-hoc networks.	6 Marks
		(OR)	
10.	a)	Compare intracluster routing protocols and intercluster routing protocols.	6 Marks
	b)	Explain DEEP clustering protocol.	6 Marks

CODE No.:16MT10502 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular/Supplementary Examinations January - 2019

ADVANCED DATABASE MANAGEMENT SYSTEMS

[Computer Science]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Summarize the steps needed to convert a Relational Database Design to an ER-Diagram. 12 Marks

(OR)

2. a) Suppose you are given the following requirements for a simple database for the National Hockey League (NHL): 6 Marks
   i) the NHL has many teams,
   ii) each team has a name, a city, a coach, a captain, and a set of players,
   iii) each player belongs to only one team,
   iv) each player has a name, a position (such as left wing or goalie), a skill level, and a set of injury records,
   v) a team captain is also a player,
   vi) a game is played between two teams (referred to as host_team and guest_team) and has a date (such as May 11th, 1999) and a score (such as 4 to 2).
   Construct a clean and concise ER-diagram for the NHL database.
   b) Explain in detail about Relationship Types, Roles and Structural Constraints for ER-diagram. 6 Marks

UNIT-II

3. a) Write the related specifications of XML. What is Document Object Model? Why it is used? 6 Marks
   b) Explain briefly about the Concepts and Hierarchical Data Model of XML in Databases. 6 Marks

(OR)

4. a) Identify the difference between UNION and UNION ALL. 6 Marks
   b) Define an Assertion. How an Assertion can be created and implemented in SQL? 6 Marks

UNIT-III

5. a) Define a Buffering of blocks. How the read and write operations can be performed? 8 Marks
   b) Identify and explain various operations on files. 4 Marks

(OR)

6. a) Define RAID. Explain the levels of RAID. 7 Marks
   b) Demonstrate the Hash file organization with example. 5 Marks

UNIT-IV

7.	a)	Analyze the distributed INGRES algorithm with an example.	6 Marks
	b)	Write algorithms for R* and SDD-1 in Distributed Query Optimization.	6 Marks

(OR)

8.	a)	Describe the techniques based on the deferred update in recovery.	6 Marks
	b)	Identify the need for shadow paging in recovery management.	6 Marks

UNIT-V

9.	a)	Write short notes on reasons for fragmentation and fragmentation alternatives.	6 Marks
	b)	Summarize the information requirements of Horizontal Fragmentation.	6 Marks

(OR)

10.	a)	Explain briefly about the Derived Horizontal Fragmentation with an example.	6 Marks
	b)	Write Partitioning algorithm for Vertical Fragmentation.	6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular/Supplementary Examinations January - 2019

ADVANCED OPERATING SYSTEMS

[Computer Science]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Define process. What are various process states?	7 Marks
	b)	Describe the actions taken by the kernel to context switch between processes.	5 Marks
		(OR)	
2.	a)	Discuss various operating system services.	8 Marks
	b)	Differentiate command interpreter with GUI.	4 Marks

UNIT-II

3.		Explain any two Classic Synchronization problems and its solution.	12 Marks
		(OR)	
4.	a)	Solve Dining philosopher's problem using Semaphores and Monitors.	8 Marks
	b)	Explain briefly about Test and Set( ) and Swap( ).	4 Marks

UNIT-III

5.	a)	Describe various file allocation methods with their relative advantages and disadvantages.	6 Marks
	b)	Discuss about the tree-structured directory structure.	6 Marks
		(OR)	
6.	a)	Why sharing a reentrant module is easier in segmentation compared to paging?	5 Marks
	b)	What is Thrashing? How does system detect Thrashing? What system does to eliminate this problem?	7 Marks

UNIT-IV

7.	a)	How to implement Access Matrix?	7 Marks
	b)	Write short notes on Interrupt handling.	5 Marks
		(OR)	
8.	a)	With a neat sketch, explain about Interrupt-Driven I/O Cycle.	6 Marks
	b)	How protection can be provided for file system?	6 Marks

UNIT-V

9.	a)	Analyze different challenges of distributed system.	7 Marks
	b)	Apply distributed system in Real Time and Multimedia systems.	5 Marks
		(OR)	
10.	a)	Classify Distributed Systems.	6 Marks
	b)	Illustrate the Client Server model with an example in Distributed Systems.	6 Marks

CODE No.:16MT10504 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular/Supplementary Examinations January - 2019

DATA WAREHOUSING AND DATA MINING

[Computer Science, Computer Networks and Information Security]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		What are the kinds of data on which data mining is done? Discuss in detail with appropriate diagrams.	12 Marks
		(OR)	
2.		Explain three-tier data warehouse architecture with a neat diagram.	12 Marks

UNIT-II

3.	a)	Write the FP-growth algorithm. Explain.	6 Marks
	b)	What are rule constraints? How are they classified?	6 Marks
		(OR)	
4.		Explain clearly about Descriptive data summarization.	12 Marks

UNIT-III

5.	a)	Give the network architecture of a multilayer feed forward neural network and explain the functionality of each.	6 Marks
	b)	Illustrate back propagation algorithm in detail.	6 Marks
		(OR)	
6.	a)	Explain briefly about Bayesian belief networks.	6 Marks
	b)	Describe rule extraction from a decision tree.	6 Marks

UNIT-IV

7.	a)	Describe k-means as an optimization problem.	6 Marks
	b)	Illustrate about agglomerative hierarchical clustering.	6 Marks
		(OR)	
8.	a)	Explain the strengths and weaknesses of DBSCAN algorithm.	6 Marks
	b)	Describe any two specific techniques of hierarchical clustering.	6 Marks

UNIT-V

9.	a)	Write about mining the World Wide Web.	6 Marks
	b)	Write about mining the webpage layout structure.	6 Marks
		(OR)	
10.	a)	What is similarity search in multimedia data?	6 Marks
	b)	Explain about classification and prediction analysis of multimedia data.	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular/Supplementary Examinations January - 2019

ADVANCED CONTROL SYSTEMS

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Explain the concept of controllability and observability. 4 Marks

   b) Given the system $\dot{x} = \begin{bmatrix} -1 & 0 & 0 \\ 0 & -2 & 0 \\ 0 & 0 & -3 \end{bmatrix} x + \begin{bmatrix} 0 & 1 \\ 2 & 0 \\ 0 & 1 \end{bmatrix} u \; ; y = \begin{bmatrix} 0 & 1 & 2 \\ 0 & 1 & 0 \end{bmatrix} x \;$; 8 Marks

   State the condition of controllability and observability of the system.

(OR)

2. Derive the equations for Gilbert's and Kalman's test for system controllability. 12 Marks

UNIT-II

3. a) Discuss the characteristics of non-linear systems. 6 Marks

   b) Explain how the stability of a limit cycle can be accessed through phase plane analysis. 6 Marks

(OR)

4. Explain the constructional procedure of phase trajectories by: 12 Marks
   (i) Isocline method. (ii) Analytical method.

UNIT-III

5. Explain the terms-stability in the sense of Liapunov, Asymptotic stability and instability with graphical representation. 12 Marks

(OR)

6. a) How is Lyapunov's second method useful for stability analysis of linear continuous time invariant systems? 6 Marks

   b) Determine the stability of the system described by the state equation. 6 Marks

   $\dot{x} = Ax$, where $A = \begin{bmatrix} -1 & -2 \\ 1 & -4 \end{bmatrix}$.

UNIT-IV

7. For the given system, design an observer of order one. The observer pole is required to be located at **-4**. 12 Marks

$$A = \begin{bmatrix} 0 & 1 & 0 \\ 3 & 2 & 0 \\ 1 & 1 & 1 \end{bmatrix} \; ; \quad B = \begin{bmatrix} 0 & 0 \\ 1 & 0 \\ 0 & 1 \end{bmatrix} \; ; \quad C = \begin{bmatrix} 1 & 2 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

For a multi input system, explain state feedback control design through pole - placement.

(OR)

8. a) Write the necessary and sufficient conditions for arbitrary pole placement. 6 Marks

b) A system is represented by following state model is controllable but not observable. Show that non-observability is due to a pole zero cancellation in $C[SI-A]^{-1}$. 6 Marks

$$\dot{x} = \begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ -6 & -11 & -6 \end{bmatrix} x + \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix} u$$

$$Y = \begin{bmatrix} 1 & 1 & 0 \end{bmatrix} x$$

UNIT-V

9. Find the optimal control u*(t) for the system $\dot{x} = \begin{bmatrix} 0 & 1 \\ -10 & 0 \end{bmatrix} x + \begin{bmatrix} 0 \\ 10 \end{bmatrix} u$ which minimizes the performances index $j = \frac{1}{2}\int_0^2 u^2 dt$, given x(0)=$\begin{bmatrix} 1 \\ 1 \end{bmatrix}$; x(2)=$\begin{bmatrix} 0 \\ 0 \end{bmatrix}$ 12 Marks

(OR)

10. a) Illustrate the relevant principles of calculus of variations. 6 Marks

b) Obtain the control law to minimize the performance index $j = \int_0^\infty (x_1^2 + u^2) dt$ for the system $\dot{x} = \begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix} X + \begin{bmatrix} 0 \\ 1 \end{bmatrix} u$; 6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular/Supplementary Examinations January - 2019

HIGH VOLTAGE ENGINEERING

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Explain the concept of electronegative breakdown and time lags breakdown in gas dielectrics. 6 Marks
   b) Explain in brief the properties of solid dielectrics. 6 Marks

(OR)

2. Explain suspended particle theory of breakdown in liquid dielectrics. 12 Marks

UNIT-II

3. a) Explain the four stage Marx impulse generator circuit. Discuss the triggering by three electrode gap arrangement. 6 Marks
   b) Write a short note on ratings of an impulse generator. 6 Marks

(OR)

4. What is the necessity of connecting transformers in cascade? Explain with the help of a neat sketch, the construction and working principle of a cascading of transformers for three units. 12 Marks

UNIT-III

5. a) Explain the construction and working of a generating voltmeter. 6 Marks
   b) A generating voltmeter has to be designed so that it can have a range from 20 to 200kV **d.c**. If the indicating meter reads a minimum current of 2μA and maximum current of 25μA, what should the capacitance of the generating voltmeter be? 6 Marks

(OR)

6. Explain the discharge detection using straight detector for partial discharge measurement. 12 Marks

UNIT-IV

7. Briefly explain the PD measurement by non-electrical methods. 12 Marks

(OR)

8. Explain the construction and working of discharge detection by using straight method. 12 Marks

UNIT-V

9. Discuss the various tests carried out on a surge arrester at high voltage laboratories. 12 Marks

(OR)

10. What are the tests conducted on transformer? Explain in detail the impulse 12 Marks

testing of transformer.

CODE No.:16MT10703 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular/Supplementary Examinations January - 2019

POWER ELECTRONIC CONVERTERS

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Explain the basic construction of power MOSFET and compare its performance features with power BJT. 6 Marks
   b) With the help of a block diagram, explain thyristor gating circuit. 6 Marks

(OR)

2. Generalize the basic topology of Gate or Base drive circuits of power semiconductor controlled devices and demonstrate Gate drive circuits for power MOSFET. 12 Marks

UNIT-II

3. Develop the firing sequence and circuit topology of 18 pulse and 24 pulse converter for a delay angle of $\alpha = 0^{o}$. 12 Marks

(OR)

4. For a 12-pulse rectifier obtain the following: 12 Marks
   i) RMS value of line current.
   ii) Displacement power factor.
   iii) THD.

UNIT-III

5. Illustrate the sequence of switching in each phase leg of a three phase full wave voltage source converter and obtain relevant waveforms and phasor diagrams through all four quadrants. 12 Marks

(OR)

6. a) Review the operation of a three phase full wave thyristor based current source converter as an inverter and draw relevant waveforms. 10 Marks
   b) Write the limitations of current source converter with conventional thyristors. 2 Marks

UNIT-IV

7. Classify resonant converters. Explain the operation of M-type ZCS resonant converter and sketch relevant waveforms. 12 Marks

(OR)

8. Identify and explain the phenomenon for shaping the switch voltage waveform of a DC - DC converter to create a zero voltage condition. 12 Marks

UNIT-V

9. Discuss the topologies of Diode clamped and improved Diode clamped multilevel inverters. 12 Marks

(OR)

10. Discuss the following voltage control techniques for three phase inverter: 12 Marks
    i) Sinusoidal PWM.
    ii) Sixty degree PWM.
    iii) Third harmonic PWM.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular/Supplementary Examinations January - 2019

POWER SYSTEM SECURITY AND STATE ESTIMATION

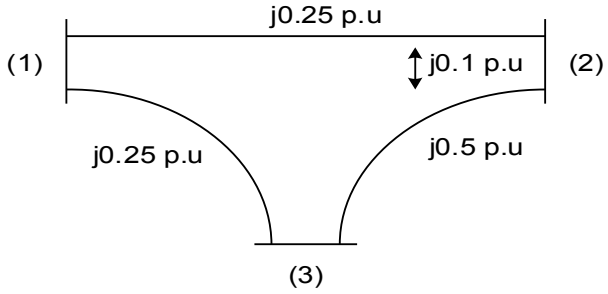
[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

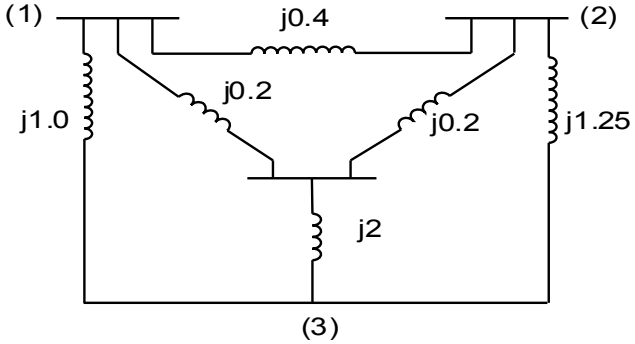
UNIT-I

1. a) Derive an expression for adding a link to a network with mutual inductance. 6 Marks
   b) Compute the bus impedance matrix for the system shown in figure by adding element by element. Take bus (2) as reference bus. 6 Marks



(OR)

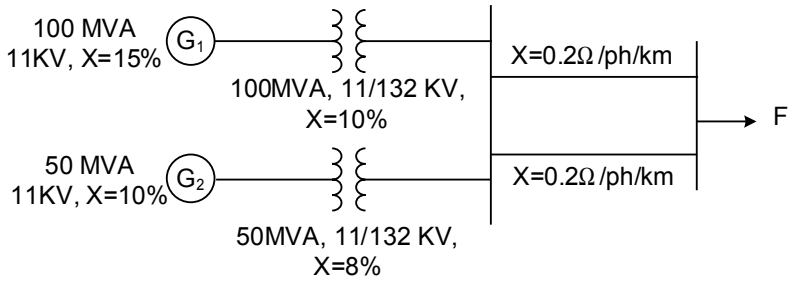
2. a) Using singular transformation method, determine Y_{bus} for the network shown in figure. Where the impedances labeled are shown in per unit. 9 Marks



   b) List out various new methodologies for formation of bus admittance and impedance matrix. 3 Marks

UNIT-II

3. Figure shows a generating station feeding a 132KV system. Determine the total fault current, fault level and fault current supplied by each alternator for a 3-phase fault at the receiving end bus. The line is 200km long. 12 Marks



(OR)

4. a) Show that for a stationary element, the phase impedance matrix is diagonalized using symmetrical component transformation. 6 Marks

b) Find the sequence impedance matrix of pq element whose phase component impedance matrix is 6 Marks

$$\left(Z_{pq}^{abc}\right)=\begin{bmatrix} j0.22 & j0.13 & j0.23 \\ j0.23 & j0.2 & j0.13 \\ j0.13 & j0.23 & j0.22 \end{bmatrix}$$

UNIT-III

5. a) Discuss load flow solution for power system containing with and without PV buses. 9 Marks

b) What are the various IEEE open source simulated tools available to solve load flow problem? 3 Marks

(OR)

6. a) Explain the 1P1Q method of contingency selection. Also, explain the role of Performance Index (PI) in contingency analysis. 6 Marks

b) Describe briefly about DC power flow method. 6 Marks

UNIT-IV

7. a) Explain the linear sensitivity factors for power system security. 6 Marks

b) Describe security assessment and security enhancement in power system. 6 Marks

(OR)

8. Explain generation and line outage analysis of a power system with flow chart. How is contingence analysis useful in operating of the power system? 12 Marks

UNIT-V

9. a) Explain about EMS center in PSSE. 6 Marks

b) Describe briefly about data acquisition techniques used in PSSE. 6 Marks

(OR)

10. Compute the two value random variables X by weighted least square estimate method for a given measurement vector Z. 12 Marks

$$Z=\begin{bmatrix} 0.5 \\ 0.45 \\ 0.51 \end{bmatrix} \quad H=\begin{bmatrix} 1 & 1 \\ 1 & 0 \\ 0 & 1 \end{bmatrix} \quad \text{With weighting matrix}=\begin{bmatrix} 1 & 0 & 0 \\ 0 & 0.5 & 0 \\ 0 & 0 & 0.1 \end{bmatrix}$$

CODE No.:16MT10705 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular/Supplementary Examinations – January 2019

REACTIVE POWER COMPENSATION AND MANAGEMENT

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Derive the approximate formula for the voltage regulation of a transmission line.	6 Marks
	b)	State the causes for variation in magnitude of voltage at the load buses and also write the effect of low voltage and high voltage on the performance of tube lights.	6 Marks

(OR)

2.	a)	Is that voltage regulator acts as a reactive power compensator in power transmission networks? Justify your answer.	6 Marks
	b)	What is load compensation? Explain reactive power characteristics of load compensation in detail.	6 Marks

UNIT-II

3.	a)	Draw typical fundamental voltage/current characteristic of the TCR compensator and justify your answer with the concern equation.	6 Marks
	b)	Explain about the dynamic working of a midpoint compensator.	6 Marks

(OR)

4.	a)	With the help of equivalent circuit and transient voltage/current characteristics, explain how reactive power compensation can be achieved using synchronous condensers.	6 Marks
	b)	Discuss various types of steady state reactive power compensations in detail.	6 Marks

UNIT-III

5.	a)	Elaborate the objectives of reactive power coordination.	6 Marks
	b)	Explain the consequences of over and under voltages in power systems.	6 Marks

(OR)

6.	a)	Discuss the importance of reactive power coordination.	6 Marks
	b)	On what factors do the quality of power supply is measured and give IEEE/IEC standards.	6 Marks

UNIT-IV

7.	a)	Explain voltage flickering and harmonic voltage with the help of wave form.	3 Marks
	b)	What is the effect of harmonic voltages on the performance of a load?	3 Marks
	c)	Discuss the penalties for voltage flickers and harmonic voltage levels.	6 Marks

(OR)

8.	a)	Discuss various loss reduction methods in distribution networks.	6 Marks
	b)	Explain the retrofitting of capacitor banks on distribution side for reactive power management.	6 Marks

UNIT-V

9.	a)	Draw and explain the typical layout of traction systems.	6 Marks
	b)	Illustrate the characteristics of Arc furnace. Explain the reactive power management for an Arc furnace.	6 Marks

(OR)

10.	a)	What are the deciding factors considered for selection of capacitor? And explain the purpose of capacitors in reactive power compensation.	6 Marks
	b)	Explain the characteristics of different types of capacitors used in industrial sector.	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular/Supplementary Examinations January - 2019

MICROCONTROLLERS AND APPLICATIONS

[Electrical Power Systems, Power Electronics and Drives]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Describe different modes of operation of timers in 8051.	CO1	6 Marks
	b)	Write an assembly language program for 8051 Microcontroller to obtain the sum of 10 bytes of data available in external memory.	CO3	6 Marks
		(OR)		
2.	a)	Write an ALP for 8051 Microcontroller to transfer 10 bytes of data from internal RAM to external RAM.	CO3	6 Marks
	b)	Discuss the features of 8051 Microcontroller.	CO1	6 Marks

UNIT-II

3.		Draw and explain the hardware circuit of a 4 x 4 key board interfaced with 8051. Develop an ALP to read the data from the key board.	CO2	12 Marks
		(OR)		
4.	a)	Design a DAC circuit interfaced with 8051 Microcontroller for the generation of triangular wave.	CO2	6 Marks
	b)	Explain the steps involved in Serial port programming.	CO1	6 Marks

UNIT-III

5.	a)	Discuss the salient features of the ports of PIC16F877 giving the details such as number of bits, the data direction registers and memory addresses.	CO1	6 Marks
	b)	Explain with suitable sketches, the direct and indirect addressing modes of PIC16F877.	CO2	6 Marks
		(OR)		
6.		Explain the operation of the following instructions in PIC16F877 Microcontroller: (i) MOVLW k (ii) INCFSZ f,d (iii) BSF f,b (iv) IORWF f,d	CO1	12 Marks

UNIT-IV

7.	a)	Explain in detail about I/O ports in PIC17F877.	CO1	6 Marks
	b)	Explain the role of prescalar in CCP operation. Also, list modes of operation possible with CCP module.	CO2	6 Marks
		(OR)		
8.		Discuss the Timer - 0, 1 and 2 modules of PIC16F877 Microcontroller.	CO1	12 Marks

UNIT-V

9.		Discuss the DC motor control with ECCP.	CO4	12 Marks
		(OR)		
10.		Discuss in detail about steps involved in programming PWM in PIC17F877 Microcontroller.	CO2	12 Marks

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CODE No.:16MT12502 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular/Supplementary Examinations – January 2019

DATA STRUCTURES AND ALGORITHMS

[Computer Science, Software Engineering]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Write an algorithm to read the elements of single linked list in reverse order. 12 Marks

(OR)

2. a) Explain the time complexity and space complexity estimation of an algorithm. 6 Marks
   b) Explain the various asymptotic notations with example. 6 Marks

UNIT-II

3. a) Arrange the following numbers in increasing order using radix sort: (10, 18, 29, 68, 32, 43, 37, 87, 24, 47 and 50). 7 Marks
   b) Write an algorithm for linear search. 5 Marks

(OR)

4. a) Demonstrate the step by step process of counting sort using an example. 8 Marks
   b) Describe the tree representations. 4 Marks

UNIT-III

5. Explain various hash functions with example. 12 Marks

(OR)

6. a) Find the Best, Worst and Average case complexities of Binary Search algorithm. 6 Marks
   b) A hash table with b =17 buckets, and the hash function f(k) = k% b; start with an empty hash table and insert pairs using linear probing whose keys are 7, 42, 25, 70, 14, 38, 8, 21, 34, 11. The pairs are inserted in this order. 6 Marks
      i) Draw the hash table for each insertion.
      ii) What is the loading factor after last insertion?
      iii) What is the maximum number of buckets examined in an unsuccessful search of your table?
      iv) What is the maximum number of buckets examined in a successful search?

UNIT-IV

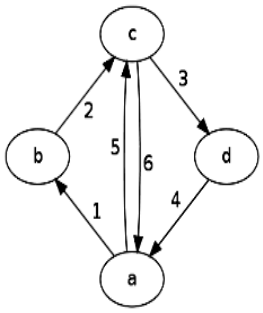
7. Explain single source shortest path problem with example. 12 Marks

(OR)

8. Write the algorithm of quick sort and analyze its complexity. 12 Marks

UNIT-V

9. Define Traveling Salesperson problem. Find the shortest route to visit the following connected cities. 12 Marks



(OR)

10. a) Define m-coloring problem and explain with an example. 7 Marks
    b) Explain the general method of Branch and Bound. 5 Marks

CODE No.:16MT15701 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular/Supplementary Examinations January - 2019

ANALOG IC DESIGN

[V L S I]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Draw and explain basic differential pair. 12 Marks

(OR)

2. Consider a source follower which is biased by a current mirror. The dimensions of all the transistors are W/L=100μm/1.6μm, $\mu_n C_{ox}$ =90μA/V^2, $\mu_p C_{ox}$ =30μA/V^2, I_{bias} =100 μA, γ = 0.5V^{½} and $\mathbf{r_{ds-n}}$=80000L (μm)/ID (mA). What is the gain of the stage? 12 Marks

UNIT-II

3. Appraise the statistical characteristics of noise. 12 Marks

(OR)

4. Assess the effect of negative feedback on the frequency response of Op Amp. 12 Marks

UNIT-III

5. Illustrate noise in Op Amps. 12 Marks

(OR)

6. Write short notes on: 12 Marks
   i) Gain boosting. ii) Input range limitations.

UNIT-IV

7. Apply appropriate technique for compensation of Two-Stage Op Amps. 12 Marks

(OR)

8. Apply any one appropriate technique for eliminating or moving the effect of right half plane zero in two stage CMOS Op Amps. 12 Marks

UNIT-V

9. Define switched capacitor integrator. List important features of it. 12 Marks

(OR)

10. Explain charge injection cancellation and precision consideration in sampling switches. 12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular/Supplementary Examinations January - 2019

COMPUTATIONAL METHODS IN MICROELECTRONICS

[V L S I]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Discuss iterative method technique for matrix solutions. 7 Marks
   b) Relate spline functions for interpolation and curve fitting. 5 Marks

(OR)

2. Develop the solution set using triangular form and verify them by using back substitution method for the given linear system of equations. 12 Marks

$X_1+3X_2+4X_3+X_4 = 7$
$2X_1+5X_2+3X_3-2X_4=10$
$X_1+4X_2+6X_3-X_4 = 8$
$2X_1+2X_2- X_3+2X_4 = 3$

UNIT-II

3. Explain in detail about Taylor Series method for Finite Difference Techniques. 12 Marks

(OR)

4. Evaluate and Compare $y' = f(x,y) = xy^{\frac{1}{3}}$ using Taylor Series method, RungeKutta method and Exact method. 12 Marks

UNIT-III

5. Suggest a method to select an approximating function for the dependent variables within a specified physical region. Explain the same. 12 Marks

(OR)

6. a) Illustrate moment methods used in circuit simulation techniques. 6 Marks
   b) Relate sensitivity analysis to tuning simulation. 6 Marks

UNIT-IV

7. Discuss in detail about moving boundary problems. 12 Marks

(OR)

8. a) Relate interpolation techniques for practical grid generation. 6 Marks
   b) Formulate a method for time dependant grid redistribution techniques. 6 Marks

UNIT-V

9. a) Sketch 2D Model of BJT. Derive the relation between I_{DS} and V_{DS}. 5 Marks
   b) Illustrate the Process and Device Simulation of NPN BJT. 7 Marks

(OR)

10. a) Differentiate chip yield and wafer yield. 4 Marks
    b) Analyze the Critical Area for Point Defects and Lithographic Defects. 8 Marks

CODE No.:16MT15703 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular/Supplementary Examinations January - 2019

DEVICE MODELING

[V L S I]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Appraise a two terminal MOS structure in accumulation, depletion and inversion regions. 6 Marks
   b) Explain how MOS acts as a capacitor. 6 Marks

(OR)

2. a) Characterize the different regions of inversions in MOS structure. 6 Marks
   b) Interpret the charge balance and flat band voltage in a MOS device. 6 Marks

UNIT-II

3. Illustrate the general charge sheet models. 12 Marks

(OR)

4. Differentiate the source referenced and body referenced modeling. 12 Marks

UNIT-III

5. What is threshold voltage? Derive the expression of threshold voltage. 12 Marks

(OR)

6. Identify the effects due to thin oxides and high doping and effects of surface and drain series resistance. 12 Marks

UNIT-IV

7. Draw a MOS device structure with charges and currents of under DC excitation and varying terminal voltages and explain. 12 Marks

(OR)

8. Assess the currents and charges under DC and varying terminal voltages excitations with its neat sketches. 12 Marks

UNIT-V

9. Discuss in detail about Y parameter model of MOS device. 12 Marks

(OR)

10. Analyze the two path view of MOS transistor in DC operation. 12 Marks

CODE No.:16MT15704 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular/Supplementary Examinations January - 2019

DIGITAL IC DESIGN

[V L S I]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Summarize the functionality for static behavior of a BiCMOS inverter. 7 Marks
   b) Let $Z = (ABCDE+FGH)'$. Realize a BiCMOS and Domino CMOS implementation of the Boolean function Z. 5 Marks

(OR)

2. a) Calculate the switching threshold for a CMOS inverter operating at $V_{dd} = 1.8$ V with $V_{tn} = 0.5$V, $V_{tp} = -0.5$V and $\beta_n = \beta_p$. Also discuss the change in the switching threshold for the cases: 6 Marks
   (i) $\beta_n > \beta_p$. (ii) $\beta_n < \beta_p$.
   Compared to $\beta_n = \beta_p$ case.
   b) Derive the expression for dynamic power dissipation in CMOS. 6 Marks

UNIT-II

3. Model a flip-flop for clock-skew, set up and hold time violations with neat timing diagrams. 12 Marks

(OR)

4. Identify and summarize logic styles for pipelined structures. 12 Marks

UNIT-III

5. a) Illustrate the method of logical effort for transistor sizing. 6 Marks
   b) Explain the concept of power consumption in CMOS gates. 6 Marks

(OR)

6. a) Explain the concept of low power CMOS design. 7 Marks
   b) List the various methods of logic effort for transistor sizing. 5 Marks

UNIT-IV

7. a) Explain the design considerations of Binary adder. 5 Marks
   b) Design Barrel shifter and write some applications of it. 7 Marks

(OR)

8. Explain carry-save multiplier and barrel shifter operation in detail 12 Marks

UNIT-V

9. Explain the salient features of documentation. 12 Marks

(OR)

10. Discuss the issues involved in documentation. 12 Marks

CODE No.:16MT15705 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular/Supplementary Examinations - January 2019

IC FABRICATION

[V L S I]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Discuss the evaluation of epitaxial thickness and doping.	6 Marks
	b)	Identify and justify the oxidation induced defects.	6 Marks

(OR)

2.		What are the possible ways of growing oxide on substrate without forming oxidation induced stacking faults?	12 Marks

UNIT-II

3.		Discuss the reactive plasma etching technique and also explain the equipments used to perform this type of etching.	12 Marks

(OR)

4.		Outline the different types of optical lithographic techniques and explain.	12 Marks

UNIT-III

5.	a)	List and judge the models of diffusion in solids.	6 Marks
	b)	Interpret the VLSI shallow junctions using Ion implantation.	6 Marks

(OR)

6.		Define Rapid annealing. Explain in detail.	12 Marks

UNIT-IV

7.		Appraise the following	
		i) Physical vapour deposition.	6 Marks
		ii) Metallization choices.	6 Marks

(OR)

8.		Give a brief note on metallization application and choices of metallization.	12 Marks

UNIT-V

9.		Describe how the Beam specimen interactions interact with analytical beams.	12 Marks

(OR)

10.		Mention packages types and packing desired conditions used for VLSI devices.	12 Marks

CODE No.:16MT15707 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular Examinations January - 2019

FPGA ARCHITECTURES AND APPLICATIONS

[V L S I]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	What is an FPGA and write the advantages and disadvantages of FPGA and also explain why the name reconfigurable?	CO1	12 Marks
	(OR)		
2.	Implement a combinational circuit using any one of the PLD.	CO5	12 Marks

UNIT-II

3.	Draw the programmable logic block architecture of FPGA and explain.	CO1	12 Marks
	(OR)		
4.	Discuss in detail about programmable interconnects and I/O blocks in FPGAs.	CO1	12 Marks

UNIT-III

5.	Appraise the alternative realization for state machine with an example.	CO5	12 Marks
	(OR)		
6.	Recognize the importance of one hot machine and write its advantages.	CO2	12 Marks

UNIT-IV

7.	Appraise the importance of system level design using mentor graphics/Xilinx EDA tool.	CO5	12 Marks
	(OR)		
8.	Illustrate a system level design of a controller.	CO1	12 Marks

UNIT-V

9.	Examine the intracacies in design of a counter using FPGA technology.	CO1	12 Marks
	(OR)		
10.	Write the applications of reprogramming and design an Adder with FPGA architecture.	CO3	12 Marks

CODE No.:16MT18304 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Supplementary Examinations January - 2019

MODELING OF ELECTRICAL MACHINES

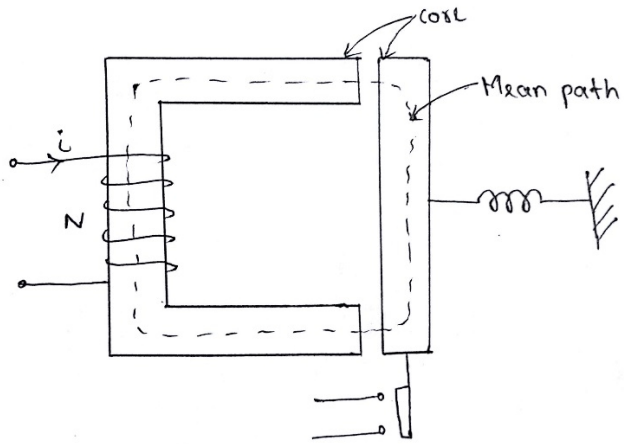
[Power Electronics and Drives]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Explain the modeling of linear magnetic circuit and derive its voltage equation.	CO1	6 Marks
	b)	Choose the magnetic circuit of the primitive relay as shown in figure. The coil has 500 turns and the mean core path is 360**mm**. When air gap lengths are 1.5mm each, a flux density of 0.8 tesla is required to actuate the relay. The core is cast steel. (Assume H_c = 510 AT/m) i) Find the current in the coil ii) Compute the values of permeability and relative permeability of the core iii) If the air gap is zero, find the current in the coil for the same flux density (0.8 T) of the core	CO2	6 Marks



(OR)

2.	a)	Obtain and explain the voltage equation of the linear magnetic circuit.	CO1	6 Marks
	b)	Define magnetizing inductance. How it is related with reluctance of the magnetic path?	CO1	6 Marks

UNIT-II

3.	a)	Analyze the state space model for permanent magnet DC machine.	CO2	6 Marks
	b)	Explain in detail about the equivalent circuit of a shunt connected DC machine.	CO1	6 Marks

(OR)

4.	a)	Explain the method of armature voltage control of DC machine with suitable graph.	CO2	6 Marks
	b)	A variable speed drive system uses a DC motor excited by a variable voltage source. The drive speed is varied from 0 to 1500 r.p.m. (base speed) by varying the terminal voltage from 0 to 500V with the field current maintained constant. (i) Determine the motor armature current if the torque is held constant at 300N-m upto the base speed. (ii) The speed beyond base speed is obtained by field weakening while the armature voltage is kept constant at 500V. Determine the torque available at the speed of 3000 r.p.m. if the armature current is held constant at the value obtained in (i). Neglect all losses.	CO2	6 Marks

UNIT-III

5.	a)	Explain the transformation from three phases to two phase variables using suitable transformation technique.	CO4	6 Marks
	b)	Explain the transformation of stationary circuit variables to arbitrary reference frame for resistive element.	CO4	6 Marks

(OR)

6.	a)	How are the variables observed from several frames of references? Explain.	CO1	6 Marks
	b)	Elaborate on the inverse Clarke's transformation using transformation theory.	CO1	6 Marks

UNIT-IV

7.		Examine the equation for voltage in arbitrary reference frame variable for symmetrical induction machine.	CO4	12 Marks

(OR)

8.	a)	Obtain the equation for torque in machine variable for symmetrical induction machine.	CO1	6 Marks
	b)	Explain how the voltage is induced in symmetrical induction machine and derive the equation for it.	CO2	6 Marks

UNIT-V

9.		Obtain the voltage equation of three-phase synchronous machine by applying park's transformation technique.	CO4	12 Marks

(OR)

10.		Analyze the constructional features of three-phase salient pole synchronous machine and discuss its; i) Starting methods ii) Role of damper windings	CO2	12 Marks

CODE No.:16MT22504 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Regular/Supplementary Examinations January - 2019

SOFTWARE TESTING TECHNIQUES

[Computer Science]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		Differentiate on levels of validation and advantages of validation.	12 Marks
		(OR)	
2.		Define why independent testing is required.	12 Marks

UNIT-II

3.		Describe top-down approach for Integration.	12 Marks
		(OR)	
4.		List down customer responsibilities during acceptance testing.	12 Marks

UNIT-III

5.		What are the roles and responsibilities of tester and test manager?	12 Marks
		(OR)	
6.	a)	How are efforts and cost of testing estimated?	6 Marks
	b)	Explain template for test planning.	6 Marks

UNIT-IV

7.		Differentiate between process metrics and product metrics.	12 Marks
		(OR)	
8.		Explain bench marking concept. Why it is required? Explain steps in benchmarking.	12 Marks

UNIT-V

9.		Develop a use case to describe a user purchase of a laptop with credit card from online vendor using web based software. With use case, design a set of tests you would use during system test (general).	12 Marks
		(OR)	
10.	a)	Describe the activities or tasks and responsibilities for developer tester in support of multilevel testing.	6 Marks
	b)	List the tasks that must be performed by the developer or tester during the preparation for unit testing.	6 Marks

CODE No.:16MT10501 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Supplementary Examinations August - 2019

ADVANCED COMPUTER NETWORKS

[Computer Science, Computer Networks and Information Security]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	What is the difference between a host and an end system?	4 Marks
	b)	Explain different types of end systems.	8 Marks
		(OR)	
2.	a)	What is ATM protocol architecture? Distinguish between: (i) ATM cells at the user-network interface and (ii) ATM cells at the network-node interface.	8 Marks
	b)	Summarize the features of Classful IP addressing.	4 Marks

UNIT-II

3.	a)	Discuss least-cost-path routing algorithms.	6 Marks
	b)	Compare Intra- domain and Inter-domain routing protocols.	6 Marks
		(OR)	
4.		Explain point-to-point protocol in detail.	12 Marks

UNIT-III

5.	a)	Explain why the client issues an active open for the control connection and a passive open for the data connection.	6 Marks
	b)	Explain why FTP does not have a message format.	6 Marks
		(OR)	
6.	a)	Describe the sequence of events in FTP for retrieving a list of items in a directory.	8 Marks
	b)	List and explain data formatting commands in FTP.	4 Marks

UNIT-IV

7.	a)	Explain major challenges in mobile IP.	6 Marks
	b)	Sketch the header format of mobile IP registration.	6 Marks
		(OR)	
8.	a)	Explain the function of basic optical networking devices.	6 Marks
	b)	Compare various Wireless LAN Technologies.	6 Marks

UNIT-V

9.	a)	Describe MANET. How does a MANET differ from a fixed infrastructure network?	6 Marks
	b)	Write about application of wireless sensor networks in home personal area networking as in industrial plants.	6 Marks
		(OR)	
10.	a)	What are the advantages of MANETS and wireless sensor networks integrated with IPv6?	6 Marks
	b)	Compare MANET and wireless sensor network.	6 Marks

CODE No.:16MT10503 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Supplementary Examinations August - 2019

ADVANCED OPERATING SYSTEMS

[Computer Science]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	What is cooperative process? How they are useful for IPC?	5 Marks
	b)	Discuss in detail about shared memory and message passing IPC systems.	7 Marks
		(OR)	
2.	a)	Define Process. What are various process states?	7 Marks
	b)	Describe the actions taken by the kernel to context switch between processes.	5 Marks

UNIT-II

3.	a)	Design the solution for Readers-Writers Problem using semaphores.	7 Marks
	b)	Define Resource. List some resources that process might need for its execution.	5 Marks
		(OR)	
4.	a)	Solve Dining philosopher's problem using semaphores and monitors.	8 Marks
	b)	Explain briefly about Test and Set( ) and swap( ).	4 Marks

UNIT-III

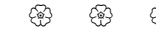
5.	a)	Describe various file allocation methods with their relative advantages and disadvantages.	6 Marks
	b)	Discuss about the tree-structured directory structure.	6 Marks
		(OR)	
6.	a)	Explain the following methods of allocating disk space. (i) Linked allocation. (ii) Indexed allocation.	6 Marks
	b)	Compute the total number of head movements needed to satisfy the following sequence using SSTF and SCAN disk scheduling policies 27, 129, 110, 186, 147, 41, 10, 64, 120. Assume that the disk head is initially positioned over track 100 and is moving in the direction of decreasing track number.	6 Marks

UNIT-IV

7.	a)	Discuss how access matrix can be used for providing protection.	6 Marks
	b)	Categorize different schemes for protection.	6 Marks
		(OR)	
8.	a)	'The separation of policy and mechanism is important for flexibility in providing protection'. Comment on it.	6 Marks
	b)	Explain various characteristics of I/O devices.	6 Marks

UNIT-V

9.	a)	Discuss how remote procedures can be called.	6 Marks
	b)	Identify the need for group communication. Describe how group communication is achieved in Distributed Systems.	6 Marks
		(OR)	
10.	a)	List the steps involved in Bully algorithm and Ring algorithm to coordinator.	7 Marks
	b)	State and analyze Christian's clock synchronization algorithm.	5 Marks



CODE No.:16MT10504 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Supplementary Examinations August - 2019

DATA WAREHOUSING AND DATA MINING

[Computer Science, Computer Networks and Information Security]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Explain various stages of knowledge discovery process with a diagram.	6 Marks
	b)	Describe the architecture of a typical data mining system.	6 Marks

(OR)

2.	a)	What are the types of OLAP servers? Discuss clearly.	6 Marks
	b)	What is OLAM? Explain the architecture for OLAM.	6 Marks

UNIT-II

3.	a)	Describe the necessity of preprocessing the data.	8 Marks
	b)	Explain the forms of data preprocessing.	4 Marks

(OR)

4.	a)	Write the FP-growth algorithm. Explain.	6 Marks
	b)	What are rule constraints? How are they classified?	6 Marks

UNIT-III

5.		Explain in detail about rule-based classification.	12 Marks

(OR)

6.	a)	Define Bayesian classification. State and explain Bayes theorem.	6 Marks
	b)	Why naïve Bayesian classification is called "naïve"? Briefly outline the major ideas of naïve Bayesian classification.	6 Marks

UNIT-IV

7.	a)	Write the basic agglomerative hierarchical clustering algorithm.	4 Marks
	b)	Illustrate the basic agglomerative hierarchical clustering algorithm.	8 Marks

(OR)

8.	a)	Explain the classification of points according to center-based density.	6 Marks
	b)	Describe about time and space complexity of DBSCAN algorithm.	6 Marks

UNIT-V

9.		Explain about multidimensional analysis and descriptive mining of complex data objects.	12 Marks

(OR)

10.	a)	What is spatial data mining? Explain.	6 Marks
	b)	Illustrate about spatial data cube construction and spatial OLAP.	6 Marks

CODE No.:16MT10702 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Supplementary Examinations August - 2019

HIGH VOLTAGE ENGINEERING

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Explain the concept of Electronegative breakdown and Time Lags breakdown in gas dielectrics.	6 Marks
	b)	Explain in brief the properties of solid dielectrics.	6 Marks
		(OR)	
2.		What is electro convection? Explain liquid breakdown based on electro convection.	12 Marks

UNIT-II

3.	a)	Explain the construction and working principle of a tesla coil.	6 Marks
	b)	Explain two different schemes for cascade connection of transformers for producing very high voltages at 50 Hz.	6 Marks
		(OR)	
4.	a)	Briefly explain the components of a multi stage impulse generator.	6 Marks
	b)	Derive the expression for output voltage equation of a single stage impulse voltage generator.	6 Marks

UNIT-III

5.		Explain the discharge detection using straight detector for partial discharge measurement.	12 Marks
		(OR)	
6.	a)	Explain the measurement of impulse current using magnetic link and also write a short note on tools for measurement of impulse current.	6 Marks
	b)	Explain the operation of Schering bridge for three terminal measurements.	6 Marks

UNIT-IV

7.		Briefly explain the PD measurement by non-electrical methods.	12 Marks
		(OR)	
8.	a)	What is meant by non-destructive testing? Explain the construction and working of a transformer ratio arms bridge.	6 Marks
	b)	Briefly explain the need of discharge detection and partial discharge measurements.	6 Marks

UNIT-V

9.		What is the need of testing of electrical equipment? Explain in detail the testing of circuit breakers.	12 Marks
		(OR)	
10.		Explain in detail the testing of ceramic insulators.	12 Marks

CODE No.:16MT10703 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Supplementary Examinations August - 2019

POWER ELECTRONIC CONVERTERS

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Generalize the basic topology of Gate or Base drive circuits of power semiconductor controlled devices and demonstrate Gate drive circuits for power MOSFET. 12 Marks

(OR)

2. a) Explain the basic construction of power MOSFET and compare its performance features with power BJT. 6 Marks
   b) With the help of a block diagram, explain thyristor gating circuit. 6 Marks

UNIT-II

3. a) Justify how power factor of 1-Phase full converter can be improved by extinction angle control. 6 Marks
   b) Explain the steps involved in the design of a forced commutated two pulse converter feeding RL load to operate at unity power factor. 6 Marks

(OR)

4. For a 12-pulse rectifier obtain the following: 12 Marks
   i) RMS value of line current. ii) Displacement power factor. iii) THD.

UNIT-III

5. a) Review the operation of a three phase full wave thyristor based current source converter as an inverter and draw relevant waveforms. 10 Marks
   b) Write the limitations of current source converter with conventional thyristors. 2 Marks

(OR)

6. Discuss various types of current source converters. 12 Marks

UNIT-IV

7. Identify the type and class of commutation technique employed for current commutated chopper and explain its operation with the help of neat circuit and relevant wave forms. 12 Marks

(OR)

8. Illustrate the operation of Boost converter and derive the following: 12 Marks
   i) Average output voltage. ii) Switching frequency.
   iii) Peak-to-peak ripple voltage and current.
   iv) Condition for continuous inductor current and capacitor voltage.

UNIT-V

9. Write short notes on the following voltage control techniques: 12 Marks
   i) Multiple PWM. ii) Harmonic injection. iii) Delta modulation.

(OR)

10. Discuss the following voltage control techniques for three phase inverter: 12 Marks
    i) Sinusoidal PWM. ii) Sixty degree PWM. iii) Third harmonic PWM.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Supplementary Examinations August - 2019

POWER SYSTEM SECURITY AND STATE ESTIMATION

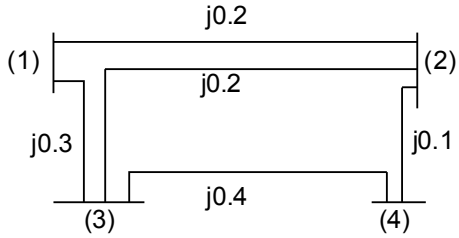
[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Develop the bus admittance matrix using direct inspection method shown in the figure: 6 Marks



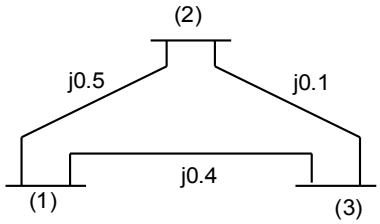
b) Prove that when there is no mutual coupling the diagonal and off-diagonal elements of the admittance Y_{bus} can be computed from: 6 Marks

$$Y_{ij} = \sum_{j} Y_{ij} \quad and \quad Y_{ij} = -Y_{ij}$$

Where Y_{ij} is the sum of the admittance of all the lines connecting buses *i* and *j*.

(OR)

2. a) Prove that $Y_{bus}=\boldsymbol{A}^{T}\boldsymbol{y}\,A$ with usual notation. 6 Marks
b) For the system shown in figure, obtain the Y_{bus} by inspection method. Take bus (1) as reference bus. The impedance marked are in p.u. 6 Marks

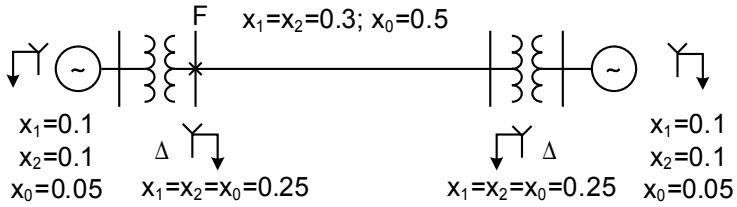


UNIT-II

3. a) A synchronous generator of 50MVA, 13.8 kV has sub-transient reactance, negative sequence reactance and zero sequence reactance equal to j0.1, j0.1 and j0.08 respectively. If a LLG fault occurs at the terminals of the generator (neutral solidly grounded). Find fault current? 6 Marks
b) Develop the primitive network three phase representations in impedance form and admittance form. Also define the matrices for stationary and rotating elements. 6 Marks

(OR)

4. a) For the system shown in below figure. A LLG fault occurs at point F. Find fault current using bus impedance algorithm. 9 Marks



b) List out the various significance of fault studies in designing the power system components. 3 Marks

UNIT-III

5. a) Explain the 1P1Q method of contingency selection. Also, explain the role of Performance index (PI) in contingency analysis. 6 Marks

b) Describe briefly about DC power flow method. 6 Marks

(OR)

6. a) Explain the factors affecting the power system security. 6 Marks

b) Describe security assessment and security enhancement in power system. 6 Marks

UNIT-IV

7. Explain generation and line outage analysis of a power system with flow chart. How is contingence analysis useful in operating of the power system? 12 Marks

(OR)

8. a) With the block diagram, explain AC power flow security analysis. 6 Marks

b) Describe security assessment and security enhancement in power system. 6 Marks

UNIT-V

9. Compute the two value random variables X by weighted least square estimate method for a given measurement vector Z. 12 Marks

$$Z = \begin{bmatrix} 0.5 \\ 0.45 \\ 0.51 \end{bmatrix} \quad H = \begin{bmatrix} 1 & 1 \\ 1 & 0 \\ 0 & 1 \end{bmatrix} \quad \text{With weighting matrix} = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 0.5 & 0 \\ 0 & 0 & 0.1 \end{bmatrix}$$

(OR)

10. a) Explain about EMS center in PSSE. 6 Marks

b) Describe briefly about data acquisition techniques used in PSSE. 6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Supplementary Examinations August - 2019

REACTIVE POWER COMPENSATION AND MANAGEMENT

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Explain how phase balancing acts as a reactive power compensator. 6 Marks
   b) Discuss the need of power factor correction of un-symmetrical loads in detail. 6 Marks

(OR)

2. a) Discuss practical compensators with their characteristics. 6 Marks
   b) Explain in detail about the role of an ideal load compensator in case of three phase unbalanced loads. 6 Marks

UNIT-II

3. a) Discuss the objectives and limitations of series compensators. 6 Marks
   b) Explain the transient state reactive power compensators in transmission system using shunt and series compensation. 6 Marks

(OR)

4. a) With the help of equivalent circuit and transient voltage/current characteristics, explain how reactive power compensation can be achieved using synchronous condensers. 6 Marks
   b) Discuss various types of steady state reactive power compensations in detail. 6 Marks

UNIT-III

5. Give the detailed mathematical modeling and operation planning for reactive power coordination. 12 Marks

(OR)

6. a) Define the term reactive power management and mention different categories of reactive power management. 6 Marks
   b) Discuss the procedure for economic planning capacitor placement in reactive power management. 6 Marks

UNIT-IV

7. a) Explain different loss reduction methods in distribution system. 6 Marks
   b) Write the procedure to place the optimal location of a capacitor in radial distribution network. 6 Marks

(OR)

8. Write a short notes on: 12 Marks
   i) Selection of Capacitors.
   ii) KVAR requirements for domestic appliances.

UNIT-V

9. a) Explain the role of filter requirement in industry and give its remedial measures. 6 Marks
   b) Discuss about the reactive power requirements for plastic industry with suitable design of a capacitor rating. 6 Marks

(OR)

10. Briefly explain the typical layout of traction systems and distribution transformer. 12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Supplementary Examinations August - 2019

DATA STRUCTURES AND ALGORITHMS

[Computer Science, Software Engineering]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Describe the operations of following linear data structures with algorithms: 12 Marks
   i) Stacks. ii) Queues.

(OR)

2. a) List the advantages of linked lists over arrays. 6 Marks
   b) Prove that $2n^2+5n+6=O(n^2)$. 6 Marks

UNIT-II

3. Discuss the time complexities of the following algorithms. 12 Marks
   i) Linear Search. ii) Bucket Sort. iii) BFS.

(OR)

4. Distinguish quick sort and merge sort, and arrange the following numbers in increasing order using merge sort 12 Marks
   10, 18, 29, 68, 32, 43, 37, 87, 24, 47, 50.

UNIT-III

5. a) Prove that a node in a binary search tree has two children, then its successor has no left child, and its predecessor has no right child. 6 Marks
   b) Compare and contrast binary search tree and AVL tree. 6 Marks

(OR)

6. a) Draw the steps required to perform a single right rotation and double LR rotation in an AVL tree. 8 Marks
   b) Compute the minimum number of nodes in AVL tree of height 20. 4 Marks

UNIT-IV

7. a) Derive the time complexity for Strassen's matrix multiplication algorithm. 6 Marks
   b) Write algorithm for merging two sorted arrays into a single sorted one using Divide and Conquer approach. 6 Marks

(OR)

8. Sort the following array elements by using merge sort technique. 12 Marks
   179, 285, 310, 351, 652, 254, 423, 861, 450, 520.

UNIT-V

9. Describe n-Queen problem with an algorithm. Draw the state space tree for 4-Queen problem. 12 Marks

(OR)

10. Write Dynamic programming solution for the travelling sales person problem for the Network with cost adjacency matrix. 12 Marks

$$\begin{bmatrix} 0 & 10 & 15 & 30 \\ 4 & 0 & 9 & 11 \\ 5 & 13 & 0 & 10 \\ 7 & 7 & 8 & 0 \end{bmatrix}$$

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech I Semester (SVEC16) Supplementary Examinations August - 2019

ANALOG IC DESIGN

[V L S I]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Sketch the circuit of Active current mirrors and explain its working Principle. 12 Marks

(OR)

2. Derive the expression for I_{ds} V_s V_{ds} of MOSFET transistor and explain the significance of different parameters present in the equations. 12 Marks

UNIT-II

3. Appraise the statistical characteristics of Noise. 12 Marks

(OR)

4. Evaluate the frequency response of a common Gate stage with necessary equivalent circuits and hence calculate the input impedance of the amplifier. 12 Marks

UNIT-III

5. Assess the necessary technique that ensures zero input-offset voltage for a 2 stage OP-AMP. 12 Marks

(OR)

6. Illustrate Noise in Op Amps. 12 Marks

UNIT-IV

7. Apply any one appropriate technique for eliminating or moving the effect of right half plane zero in two stage CMOS op amps. 12 Marks

(OR)

8. Write Short notes on: 12 Marks
   i) Supply-Independent Biasing. ii) Phase Margin.

UNIT-V

9. Draw the circuit diagram of Ring Oscillator and explain. 12 Marks

(OR)

10. Discuss in detail about Simple PLL. 12 Marks

CODE No.:16MT12501 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular/Supplementary Examinations August - 2019

CLOUD COMPUTING

[Computer Science, Computer Networks and Information Security]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Enumerate the Pros and Cons of the virtualization.	6 Marks
	b)	List various techniques of virtualization.	6 Marks

(OR)

2.	a)	What is utility computing?	4 Marks
	b)	Explain in detail about virtualization.	8 Marks

UNIT-II

3.	a)	Discuss the role of SLAs in the cloud computing.	6 Marks
	b)	Organize the cloud computing classification based on the latest services.	6 Marks

(OR)

4.	a)	Define cloud computing and identify its core features.	6 Marks
	b)	Briefly summarize the open challenges in cloud computing.	6 Marks

UNIT-III

5.	a)	How SaaS can be defined? Justify with suitable example.	6 Marks
	b)	Illustrate how IaaS workloads are catered.	6 Marks

(OR)

6.		With a neat sketch, explain the virtual private server partition in IaaS.	12 Marks

UNIT-IV

7.	a)	Explain the concept of a parameter sweep application with an example.	6 Marks
	b)	List some of the most popular frameworks for task computing.	6 Marks

(OR)

8.		What is multiprocessing? Describe the different techniques for implementing multiprocessing.	12 Marks

UNIT-V

9.	a)	What is AWS? What types of services does it provide?	6 Marks
	b)	Define bucket. What type of storage does it provide?	6 Marks

(OR)

10.		Evaluate the energy management aspects in Amazon EC2 virtualization.	12 Marks

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CODE No.:16MT13806 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular Examinations August - 2019

ASIC DESIGN

[V L S I]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Define gate array based ASIC. Classify gate array ASICs.	6 Marks
	b)	Draw and explain the structured gate array based ASIC structure.	6 Marks
		(OR)	
2.	a)	Identify and illustrate the procedure to develop programmable chips. State the various programming elements used in the PLDs.	6 Marks
	b)	Write short notes on PLDs.	6 Marks

UNIT-II

3.		Discuss in detail FPGA design approach using Altera FPGA design tool.	12 Marks
		(OR)	
4.		Explain in detail about the EPROM and EEPROM technology with the help of Altera's EPROM cell.	12 Marks

UNIT-III

5.	a)	State the different ways to synthesize a Finite State Machine (FSM).	6 Marks
	b)	Discuss in detail about the FSM synthesis in Verilog.	6 Marks
		(OR)	
6.	a)	Discuss in detail about the Cell Library.	4 Marks
	b)	Sketch and summarize schematic, sub schematic and symbol library containing icons for the primitive cells.	8 Marks

UNIT-IV

7.		Draw the circuit schematic of a true single-phase flip-flop using True Single Phase Clocking (TSPC) and explain its simulation results in detail.	12 Marks
		(OR)	
8.	a)	State the significances of design for testability in ASIC design flow.	6 Marks
	b)	Explain in detail about automatic test pattern generation in testing.	6 Marks

UNIT-V

9.	a)	List the various commercial floor planning tools for ASIC design and explain.	6 Marks
	b)	Discuss in detail about the terms: i) Channel definition. ii) Clock planning.	6 Marks
		(OR)	
10.	a)	State terms and definitions of placement.	6 Marks
	b)	List the various goals and objectives of placement.	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC16) Regular/Supplementary Examinations August - 2019

ADVANCED COMPUTER ARCHITECTURE

[Computer Science]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Explain any two Advanced Optimization of Cache performances. 8 Marks
   b) Write about the following Optimization of Cache performance. 4 Marks
      i) Merging write Buffer to reduce Miss Penalty.
      ii) Critical word first and early restart to reduce Miss Penalty.

(OR)

2. a) Compare SRAM and DRAM technologies using suitable diagrams. 6 Marks
   b) Describe about Multi banked Caches to Increase Cache Bandwidth. 6 Marks

UNIT-II

3. a) Explain Fine-grain and Course-grain program graph before and after packing with an example. 8 Marks
   b) Give a comparison about Control flow and Data flow mechanisms. 4 Marks

(OR)

4. a) A sequential program consists of the following five statements, S1 to S5. Considering each statement as a separate process, clearly identify input set Ii and output set Oi of each process. Restructure the program using Bernstein's Conditions in order to achieve maximum parallelism between processes. If any pair of processes cannot be executed concurrently, specify which of the three conditions is not satisfied. 6 Marks
   S1: A=B+C
   S2: C=B*D
   S3: S=0
   S4: Do I=A, 100
   S=S+X(I)
   End DoS5: IF(S.GT.1000) C=C*2
   b) Define Granularity and explain about the levels of parallelism in program execution on Modern computers with a neat diagram. 6 Marks

UNIT-III

5. a) Compare the relative merits of direct mapped cache, associative cache and set-associative cache. 6 Marks
   b) Investigate the hardware complexity of the various types of cache memory organizations and rank them in order. 6 Marks

(OR)

6. a) Distinguish between arithmetic mean, performance, harmonic mean performance and harmonic speedup. 6 Marks
   b) Construct a 64 input omega network using 4x4 switch modules. 6 Marks

UNIT-IV

7. a) What are the different Mechanisms for Instruction Pipelining and discuss them briefly? 6 Marks

   b) A non-pipelined processor X has a clock rate of 250 MHz and an average CPI (cycles per instruction) of 4. Processor Y, an improved successor of X, is designed with a five stage linear instruction pipeline. However, due to latch delay and clocks skew effects, the clock rate of Y is only 200 MHz. 6 Marks

   i) If a program containing 1000 instructions is executed on both processors, what is the speedup of processor Y compared with that of processor X?

   ii) Calculate the MIPS rate of each processor during the execution of this particular program.

(OR)

8. a) Describe Crossbar Networks and multiport memories with neat diagrams. 6 Marks

   b) Design a 16-input omega network using 2x2 crossbar switches. 6 Marks

UNIT-V

9. a) Draw a semantic logic diagram of the multistage crossbar network in CRAY Y-MP 816. 8 Marks

   b) Discuss the development phases of Cray MPP. 4 Marks

(OR)

10. a) Write about Distributed-Memory model for constructing SIMD Supercomputers. 6 Marks

    b) Draw the architecture of the CM-2 and describe the processing node architecture, including the processor, memory, floating point unit and network interface. 6 Marks

CODE No.:16MT20502 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC16) Regular/Supplementary Examinations August - 2019

BIG DATA ANALYTICS

[Computer Science, Computer Networks and Information Security]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Outline in detail about the Analytics process model in Big Data. 12 Marks

(OR)

2. Define Data type. Explain in detail about various types of data type in Big Data. 12 Marks

UNIT-II

3. Give the comparisons of Apache Hadoop and the Ecosystem. 12 Marks

(OR)

4. Summarizes the high level features in recent Hadoop release series. 12 Marks

UNIT-III

5. Write a program for finding the maximum recorded temperature by year from NCDC weather record. 12 Marks

(OR)

6. Write a program that mines weather dataset. 12 Marks

UNIT-IV

7. Sketch the diagram of Name Node, Data Node and Secondary Name Node. 12 Marks

(OR)

8. Explain in detail about Business Process Analytics. 12 Marks

UNIT-V

9. Give the comparisons of predictive Analytics and Descriptive Analytics. 12 Marks

(OR)

10. Explain in detail about Linear Regression. 12 Marks

CODE No.:16MT20503 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC16) Regular/Supplementary Examinations August - 2019

OBJECT ORIENTED ANALYSIS AND DESIGN

[Computer Science]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Enumerate the steps to model the New Building Blocks.	6 Marks
	b)	Illustrate the steps to model different views of a system.	6 Marks
		(OR)	
2.	a)	Illustrate various UML diagrams with clear examples.	6 Marks
	b)	List various steps to model simple collaborations.	6 Marks

UNIT-II

3.	a)	Model Activity Diagram for POS using Swim lanes, Forks and Joins.	6 Marks
	b)	Consider modeling railway reservation system and consider the use case "buy tickets" and draw collaboration diagram. Explain briefly.	6 Marks
		(OR)	
4.	a)	Write short notes on collaboration diagrams.	6 Marks
	b)	Enumerate the steps to Modeling flows of control by time ordering.	6 Marks

UNIT-III

5.	a)	What are the standard stereo types UML defines that apply to components?	6 Marks
	b)	Enumerate the steps to reverse engineer a deployment diagram.	6 Marks
		(OR)	
6.		Enumerate the steps to model the following. i) Tables, files and documents. ii) Source code.	12 Marks

UNIT-IV

7.		Discuss in detail about Analysis, Design and Implementation to Realize the use cases.	12 Marks
		(OR)	
8.		What are the major applications of Iterative and Incremental development?	12 Marks

UNIT-V

9.	a)	Explain about archetypal inception phase.	6 Marks
	b)	Explain about core work flows.	6 Marks
		(OR)	
10.		Illustrate various steps in the Elaboration phase with an example.	12 Marks

CODE No.:16MT20505 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.Tech II Semester (SVEC16) Regular/Supplementary Examinations August - 2019

INFORMATION SECURITY

[Computer Science]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		Explain in detail about security mechanisms defined in X.800.	12 Marks
		(OR)	
2.		Define security attack. Classify various security attacks defined in X.800.	12 Marks

UNIT-II

3.	a)	List the design objectives of HMAC.	5 Marks
	b)	Describe HMAC algorithm in detail.	7 Marks
		(OR)	
4.	a)	How to recover an signature using Elliptic curve Digital signature algorithm?	5 Marks
	b)	Explain in detail about Elgammal Elliptic algorithm.	7 Marks

UNIT-III

5.		Elaborate detail Kerberos version 5 authentication dialogue.	12 Marks
		(OR)	
6.	a)	Explain the principal services provided by PGP.	7 Marks
	b)	Illustrate Radix-64 conversion with an example.	5 Marks

UNIT-IV

7.		Explain in detail about IEEE 802 protocol architecture and relate the IEEE 802.11 services with the IEEE 802 protocol architecture.	12 Marks
		(OR)	
8.		Elaborate the payment process in Secure Electronic Transaction (SET).	12 Marks

UNIT-V

9.	a)	Describe the Taxonomy of malicious software.	8 Marks
	b)	What are various issues in Trusted Systems?	4 Marks
		(OR)	
10.		What is a Phishing attack and illustrate different types of Phishing attacks with real world applications that are useful to conduct research on attacks?	12 Marks

CODE No.:16MT20701 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular/Supplementary Examinations August - 2019

FLEXIBLE AC TRANSMISSION SYSTEM

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		Exemplify the power flow in meshed connected system with a suitable example.	12 Marks
		(OR)	
2.	a)	List the objectives of reactive power compensation.	6 Marks
	b)	Explain briefly the concept of shunt and series compensation.	6 Marks

UNIT-II

3.		Discuss in detail the effect of SVC for the enhancement of transient stability. What are the new initiatives to enhance stability?	12 Marks
		(OR)	
4.	a)	Explain the working of STATCOM with a neat sketch. In what way it differs from SVC?	6 Marks
	b)	Compare various types of shunt compensators.	6 Marks

UNIT-III

5.		What are the new technologies in the operation of thyristor controlled series capacitor?	12 Marks
		(OR)	
6.		Explain the control schemes for GSC and TSSC.	12 Marks

UNIT-IV

7.		Explain the power flow control and oscillation damping in the two area system using UPFC.	12 Marks
		(OR)	
8.		Discuss the new control strategies for UPFC.	12 Marks

UNIT-V

9.		What are the future directions in FACTS technology?	12 Marks
		(OR)	
10.		Describe the various combinations of multiple FACTS controllers.	12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular/Supplementary Examinations August - 2019

INTELLIGENT SYSTEMS

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) What is an activation function? Mention various activations used in ANN. 6 Marks
   b) Explain the learning process of self organizing feature maps. 6 Marks

(OR)

2. Discuss the following in detail. 12 Marks
   i) Delta rule. ii) Hebbian rule. iii) Winner Take all rule.

UNIT-II

3. Explain the following with example. 12 Marks
   i) Linguistic variables. ii) Linguistic hedges.

(OR)

4. a) Contrast crisp and fuzzy sets. 6 Marks
   b) Compose the following two fuzzy relations $\widetilde{R}_1$ and $\widetilde{R}_2$ by using the max-min and max-product composition. 6 Marks

$\widetilde{R}_1$	y_1	y_2	y_3	y_4		$\widetilde{R}_2$	z_1	z_2	z_3
x_1	.3	0	.7	.3		y_1	1	0	1
x_2	0	1	.2	0		y_2	0	.5	.4
						y_3	.7	.9	.6
						y_4	0	0	0

UNIT-III

5. Explain different types of encoding with example. 12 Marks

(OR)

6. List the steps for implementation of genetic algorithm and also write its flow chart. 12 Marks

UNIT-IV

7. Discuss the procedure of genetic algorithm based weight determination in back propagation networks. 12 Marks

(OR)

8. a) Confer how GA is used to generate rules in fuzzy logic systems. 6 Marks
   b) Draw the flow chart of FLC-GA structural optimization. 6 Marks

UNIT-V

9. Discuss the application of Ant colony intelligence in static and dynamic combinatorial optimization problems. 12 Marks

(OR)

10. What is swarm intelligence? Explain two popular swarm intelligent systems in 12 Marks

brief.

CODE No.:16MT20703 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular/Supplementary Examinations August - 2019

POWER SYSTEM STABILITY AND CONTROL

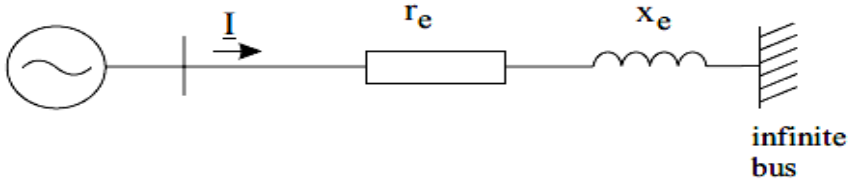
[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) For the circuit shown in figure below, let V=1.0pu, X_d'= 0.4pu and the machine is initially operating at (i) P_e= 0.8 pu at 0.85 pf (ii) P_e= 0.9 pu at 0.95pf. Calculate the rotor angle and mechanical power at the time of transient condition r_e=0.0, x_e =j0.4. 6 Marks



b) Explain in detail about equal area criterion for SMIB system. 6 Marks

(OR)

2. a) With the help of neat block diagram, develop the characteristic equation to analyze the effect of governor with one time lag. 9 Marks
b) Test the stability of governor with one time lagusing Routh Hurwitz criterion. 3 Marks

UNIT-II

3. a) Starting from fundamentals, develop the Park's Transformation matrix used in power system stability. 6 Marks
b) Derive the Transformation of inductances for synchronous machines. 6 Marks

(OR)

4. Using the parks transformation, obtain the Transformation of Current equations for synchronous machine. 12 Marks

UNIT-III

5. a) Explain the simplified view of excitation control with control configurations. 6 Marks
b) Define the simplified linear model and develop the state space modal of excitation system. 6 Marks

(OR)

6. a) Derive the state space modal of a Type 1 continuously acting regulator and excitation system. 6 Marks
b) Develop a state space model for IEEE type-2 excitation system. 6 Marks

UNIT-IV

7. a) Discusses the effect of excitation on generator power limits. 6 Marks
b) Explain briefly about lead compensation on stability with neat diagram. 6 Marks

(OR)

8. With neat block diagram, discuss about linear system model for synchronous machine with an exciter. 12 Marks

UNIT-V

9. a) Explain the method based on first integrals of constructing Lyapunov functions for nonlinear systems with suitable example. 6 Marks

   b) Explain the method of quadratic forms of constructing Lyapunov functions with suitable example. 6 Marks

(OR)

10. a) Describe the analysis of voltage instability and voltage collapse. 6 Marks

    b) Define voltage stability and voltage collapse. Describe the factor affecting the voltage instability and voltage collapse. 6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular/Supplementary Examinations August - 2019

RESTRUCTURED POWER SYSTEM

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Explain the need for deregulation in Power systems. 6 Marks
   b) What are the key issues in deregulated Power Systems? 6 Marks

(OR)

2. Explain the concept of power exchange and its operational aspects in restructured power system. 12 Marks

UNIT-II

3. Explain the salient features and need for transmission congestion contracts in deregulated power system and its modeling. 12 Marks

(OR)

4. Compared different market models based on their contractual arrangements. 12 Marks

UNIT-III

5. Explain the various transfer capability issues in OASIS and detail the procedure for the calculation of TTC. 12 Marks

(OR)

6. What is meant by Available Transfer Capability (ATC)? Enumerate the various methods of calculating ATCs of a transmission system. 12 Marks

UNIT-IV

7. What is the significance of forward curves? Explain in detail about reliable forward curves in pricing. 12 Marks

(OR)

8. Marginal cost (MC) of a generator is $\pi(q) = 5q + 50$ INR/MW. If, for a perfectly competitive market, Marginal cost price is 100 INR/ MW, what is the marginal revenue of that generator? 12 Marks

UNIT-V

9. Consider a bus ***i*** with 1 MVAR reactive power requirement at the bus. Price of reactive power on bus **'*i*'** if provided locally is INR 20 / MVAR. The price of reactive power provided by a generator at bus **'*k*'** which is located 1000 km away from bus **'*i*'** is INR 10 / MVAR. Determine at what price the operator should buy reactive power from; 12 Marks
   i) Source at bus **'*i*'**
   ii) Generator at bus **'*k*'**

(OR)

10. Explain different types of ancillary service in restructured power system. 12 Marks

CODE No.:16MT20705 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular/Supplementary Examinations August - 2019

STATIC AND DIGITAL PROTECTION OF POWER SYSTEM

[Electrical Power Systems]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	What are static relays? Compare static relays with electromagnetic relays.	5 Marks
	b)	Explain the influence of static relays on current transformers and voltage transformers.	7 Marks

(OR)

2.	a)	What is numerical relay? Discuss its advantages over conventional type relays.	6 Marks
	b)	Write the significance of level detectors and mixing circuits in static relays.	6 Marks

UNIT-II

3.	a)	Design the rectifier bridge type phase comparator and explain its working.	6 Marks
	b)	What are conic section characteristics? Discuss briefly.	6 Marks

(OR)

4.	a)	With neat diagram, explain the circulating current type amplitude comparator.	6 Marks
	b)	Explain the principal of operation of the vector product type phase comparator.	6 Marks

UNIT-III

5.	a)	Explain Harmonic restraint differential relay with neat diagram.	6 Marks
	b)	Discuss any one advanced static relay scheme used in power system protection.	6 Marks

(OR)

6.	a)	Under what circumstances the over current relays having very inverse and extremely inverse characteristics are used.	6 Marks
	b)	What is a restraint relay? Categorize the different Harmonic restraint relays.	6 Marks

UNIT-IV

7.	a)	What is an angle impedance relay? Realize its characteristics using amplitude and phase comparison techniques. .	10 Marks
	b)	What is the new technology used in distance relays to gives better performance?	2 Marks

(OR)

8.	a)	Explain the realization of impedance relay characteristics using phase comparator.	4 Marks
	b)	Analyze the effect of arc resistance and power swings on the performance of different types of distance relays.	8 Marks

UNIT-V

9.	a)	Explain the realization of reactance and Mho relay characteristics using sampling comparator.	6 Marks
	b)	Develop a suitable relay to detect the direction of power flow in transmission lines.	6 Marks

(OR)

10.	a)	Describe the realization of reactance relay using microprocessor and also develop its flowchart.	8 Marks
	b)	What are the recent advances in digital relays?	4 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular/Supplementary Examinations August - 2019

POWER QUALITY

[Electrical Power Systems, Power Electronics and Drives]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Bring out the major power quality issues in the operation of power systems. Explain them in detail. 6 Marks
   b) Differentiate between power quality, voltage quality and current quality. 6 Marks

(OR)

2. a) Define the following terms: 6 Marks
   i) Flicker. ii) Notch. iii) Power distortion.
   iv) Recovery time. v) Ride through. vi) Transient.
   b) Discuss in detail about sags, swells and interruptions. 6 Marks

UNIT-II

3. a) Explain briefly about various harmonic characterizations on power systems. 6 Marks
   b) Explain briefly about the phenomena of how current distortion affects the voltage distortion under the presence of harmonics. 6 Marks

(OR)

4. a) Explain in detail about classification of linear loads and nonlinear loads used in harmonic studies. 6 Marks
   b) Explain the concept of harmonic phenomena under the presence of harmonic producing loads. 6 Marks

UNIT-III

5. How power quality issues are handled with the following: 12 Marks
   i) CVT. ii) Magnetic synthesizers. iii) Active power filters. iv) UPS.

(OR)

6. Write short notes on conventional mitigation methods for various power quality issues. 12 Marks

UNIT-IV

7. Realize the operation of UPQC for power quality improvement using mathematical modeling. 12 Marks

(OR)

8. a) Discuss the various compensating type custom power devices. 6 Marks
   b) Explain how the dynamic voltage restorer used for sag mitigation. 6 Marks

UNIT-V

9. Describe the role of shunt and series controller in power quality scenario. 12 Marks

(OR)

10. Discuss about voltage regulation issues of distributed generation. 12 Marks

CODE No.:16MT22505 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular/Supplementary Examinations August - 2019

WEB TECHNOLOGIES

[Computer Science, Software Engineering]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Describe different types of lists in HTML. Explain the creation of these lists with suitable example. 6 Marks
   b) Define Cascading Style Sheet. Discuss about Cascading Style Sheets types. 6 Marks

(OR)

2. a) Design a web page to allow the web page or website to show the web page notifications. 6 Marks
   b) Discuss the features of HTML5. 6 Marks
      i) Web Workers ii) 2D Graphics

UNIT-II

3. a) Discuss the jQuery methods used to create animation effects. 6 Marks
   b) Design a web page to enable the user to add or remove square boxes using jQuery manipulators. 6 Marks

(OR)

4. a) Explain jQuery selectors with suitable example. 5 Marks
   b) Design a web page to Fade HTML elements in and out of visibility using a JQuery. 7 Marks

UNIT-III

5. Demonstrate OOP principles with suitable example using PHP. 12 Marks

(OR)

6. a) Design a PHP Page that reads User Name and Favorite Color from the html form and then displays user name in green color and sets user favorite color as a background color to the web page. 7 Marks
   b) Summarize OOP features supported by PHP. 5 Marks

UNIT-IV

7. a) Discuss the transaction support of MySQL using PHP. 6 Marks
   b) List the PHP authentication methodologies used to authenticate users. 6 Marks

(OR)

8. Write a PHP code to authenticate users by reading user id and password from the Login form. Compare User id and password values with user id's and passwords stored at database. If he/she is a valid user (i.e., user id and password match) then welcome him/her by name (first name + last name), otherwise display a message stating that an unauthorized user. 12 Marks

UNIT-V

9.	a)	Design a web page to update some part of the web page content using Ajax.	6 Marks
	b)	Write a code to create XMLHttpRequest Object. Explain its methods and properties.	6 Marks

(OR)

10.	a)	Describe the problems with existing web technologies.	6 Marks
	b)	Explain the AJAX web application model with neat diagram.	6 Marks

CODE No.:16MT25701 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular/Supplementary Examinations August - 2019

LOW POWER VLSI DESIGN

[V L S I]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Explain how Bi-CMOS technology is useful for low power VLSI. 12 Marks

(OR)

2. Contrast CMOS, bipolar technologies in terms of speed and power. 12 Marks

UNIT-II

3. Give the process sequences for a high-performance oxide-isolated bipolar transistor. Also draw the cross section of a transistor fabricated using the CDI process. 12 Marks

(OR)

4. Infer deep sub micron processes with the help of neat sketch. 12 Marks

UNIT-III

5. Sketch the circuits of 2-Input BICMOS NOR, 2-Input BICMOS NAND and BICMOS Inverter. 12 Marks

(OR)

6. Predict the circuit diagram of two-input CMOS NOR gate and explain its operation with the help of truth table. 12 Marks

UNIT-IV

7. Rephrase the performance evolution of Low-power latches and flip flops. 12 Marks

(OR)

8. Elaborate the quality measures for Flip-Flops. 12 Marks

UNIT-V

9. Categorize low power techniques for DRAM memory cells. 12 Marks

(OR)

10. Inspect the different low power techniques for SRAM memory cells. 12 Marks

CODE No.:16MT25702 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular/Supplementary Examinations August - 2019

MIXED SIGNAL DESIGN

[V L S I]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		Analyze the operation and analysis of switched capacitor circuit.	12 Marks
		(OR)	
2.	a)	Briefly explain about basic building blocks of switched capacitor circuits.	6 Marks
	b)	Analyze parasitic sensitive and parasitic insensitive integrator in detail.	6 Marks

UNIT-II

3.		Predict Non-ideal effects in PLLs-PFD/CP non-idealities.	12 Marks
		(OR)	
4.		Discuss and analyze Dynamics of simple PLL.	12 Marks

UNIT-III

5.		Estimate DC and dynamic specifications.	12 Marks
		(OR)	
6.	a)	What is the difference between A/D and D/A converters? Give one application of each.	6 Marks
	b)	Draw and explain the Nyquist rate D/A converter using binary scaled converter.	6 Marks

UNIT-IV

7.		Analyze inter polating A/D converters.	12 Marks
		(OR)	
8.	a)	Explain briefly a 4 bit flash A/D converter.	5 Marks
	b)	State the salient issues in designing flash A/D converters.	7 Marks

UNIT-V

9.		Explain in detail about digital decimation filter.	12 Marks
		(OR)	
10.	a)	Explain about MASH architecture.	7 Marks
	b)	Analyze multi stage decimation filters.	5 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular/Supplementary Examinations August - 2019

NANOELECTRONICS

[V L S I]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Give the basic example of the electromagnetic wave. 4 Marks
   b) The simplest example of interference effect is given by superposition of two sinusoidal waves (U_1=B sin ω_1 (r,t), U_2=B sin ω_2 (r,t) the resulting wave is sinusoidal wave of the form U_3= B_{int} sin ω_3 (r,t). Find U_3, $B_{int.}$ 8 Marks

(OR)

2. Schrodinger equation for one dimensional having arbitrary form provide how many types of the solution also represent the graphically. 12 Marks

UNIT-II

3. Draw the energy band diagram in solid. How energy and momentum are related explain with diagram? Classify the material on the basis of the energy band. 12 Marks

(OR)

4. a) Calculate the fraction of the volume of the unit cell actually occupied by atoms for the three cubic structures. 4 Marks
   b) Calculate the packing density for a hexagonal closed packed structure. 8 Marks

UNIT-III

5. a) Summarize the Fabrication of nano electro mechanical systems. 6 Marks
   b) Differentiate top-down and bottom up methods in fabricating nano devices. 6 Marks

(OR)

6. Explain about the techniques involved in Electron-beam lithography. 12 Marks

UNIT-IV

7. Write and derive the expressions for the wave function and the electron energy for double-quantum-wire and double-quantum-well structures. 12 Marks

(OR)

8. a) Find the energies of the first five levels and the order of their degeneracy for an electron confined in a cubic quantum dot with edge size L = 3 nm. Assume that the potential barriers in the quantum dot are of infinite height and that the mass of the electron is equal to the free electron mass, $\boldsymbol{m_e}$. 6 Marks
   b) Find how the density of states, $g(E)$ of quantum wire. 6 Marks

UNIT-V

9. a) List out the two different concepts to use the SET for data storage. 4 Marks
   b) How the lasers with emission in the far infrared is utilized for trace analysis of gases in the atmosphere. 8 Marks

(OR)

10. a) How the single-electron transistor is utilized for sensor technology, digital electronic circuits and mass storage. 10 Marks
    b) State the condition of operation of SET. 2 Marks

CODE No.:16MT25704 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular/Supplementary Examinations August - 2019

PHYSICAL DESIGN AUTOMATION

[V L S I]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Categorize the different design styles of VLSI design.	7 Marks
	b)	Develop the Pseudo code description of Prim's minimum spanning tree algorithm.	5 Marks

(OR)

2.	a)	Give the Pseudo code description of simulated annealing with an example.	7 Marks
	b)	Formulate and illustrate the Depth-first search algorithm for Data flow graph.	5 Marks

UNIT-II

3.		Interpret the various Terminology and Floor planning representation of an IC.	12 Marks

(OR)

4.	a)	Discuss about the standard cell placement and building block placement.	5 Marks
	b)	Appraise Code for Bellman-ford Algorithm.	7 Marks

UNIT-III

5.		Describe the Heuristic based on ROBDDs with an example.	12 Marks

(OR)

6.	a)	Describe the principles of reduced ordered binary decision diagram.	7 Marks
	b)	Explain the term variable ordering.	5 Marks

UNIT-IV

7.	a)	Evaluate Assignment by Interval and circular arc graph coloring.	8 Marks
	b)	Summarize High level transformations.	4 Marks

(OR)

8.	a)	Develop the Data Flow Graph of a second order digital filter section.	6 Marks
	b)	Develop algorithm for Mobility based scheduling.	6 Marks

UNIT-V

9.		Explain the steps in the MCM Physical design cycle.	12 Marks

(OR)

10.		Explain the FPGAs physical design cycle with neat sketch.	12 Marks

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CODE No.:16MT25705 SVEC16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Regular/Supplementary Examinations August - 2019

TESTING AND TESTABILITY

[V L S I]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Outline any two delay models. 12 Marks

(OR)

2. Sketch and explain the concept of modeling and digital circuits at logic level and register level. 12 Marks

UNIT-II

3. Appraise the Logic Fault Models. 12 Marks

(OR)

4. Sketch and describe Single stuck at faults. 12 Marks

UNIT-III

5. Explain the functional testing with specific fault models. 12 Marks

(OR)

6. Define parallel fault simulation. Explain it with suitable example. 12 Marks

UNIT-IV

7. Appraise ATPG for SSFs in sequential circuits. 12 Marks

(OR)

8. With an example, explain how ATPG/ATG is useful in detection of SSF's in sequential circuits using iterative array models. 12 Marks

UNIT-V

9. Summarize the board level self-test technique. 12 Marks

(OR)

10. With neat diagrams, explain Board-Level and System Level DFT approaches. 12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.Tech II Semester (SVEC16) Supplementary Examinations January - 2019

POWER QUALITY

[Electrical Power Systems, Power Electronics and Drives]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) What are the various power quality issues and mention the reasons for each? 8 Marks
   b) Explain the following causes on sag. 4 Marks
      i) Voltage sag due to motor staring.
      ii) Voltage sag due to transformer energizing.

(OR)

2. a) Explain the various types of power quality disturbances and their impact on power systems. 6 Marks
   b) Mention major reasons for the increased concern in power quality. 6 Marks

UNIT-II

3. a) What are the various causes of harmonics in distribution power system? 6 Marks
   b) Explain Harmonic source Identification Procedure for two source systems. 6 Marks

(OR)

4. a) List and explain the various devices for controlling harmonic distortion. 6 Marks
   b) Explain the harmonic effects on power system equipment briefly. 6 Marks

UNIT-III

5. Explain the importance of voltage regulation and the devices used for voltage regulations. 12 Marks

(OR)

6. Explain the following. 12 Marks
      i) Ferro-resonant transformer. ii) Motor-Generator sets.
      iii) Static VAR compensators.

UNIT-IV

7. a) Explain the principle of operation of dynamic voltage restorer. 6 Marks
   b) Explain how the fast transfer switches are used in minimizing the severity of sags. 6 Marks

(OR)

8. a) Explain how the solid state transfer switch can be interfaced for custom power devices. 6 Marks
   b) Explain the working principle and operation of unified power quality conditioner. 6 Marks

UNIT-V

9. Discuss the advantages and disadvantages of the common three phase transformer connections used for interconnection of distributed generation. 12 Marks

(OR)

10. Briefly discuss about the distributed generation interference with relaying. 12 Marks