SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC14) Regular/Supplementary Examinations April - 2016

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)	Distinguish between Spontaneous and Stimulated emission of radiation	6 Marks
	b)	Derive Einstein's coefficients	8 Marks
		(OR)	
2	a)	Write the importance of refractive index in optical fibers.	4 Marks
	b)	Describe the optical fiber communication system.	10 Marks

UNIT-II

3	a)	What are the absolute frames of reference?	6 Marks
	b)	Discuss about Mass-Energy Equivalence.	8 Marks
		(OR)	
4	a)	How to determine the Miller Indices in cubic crystals.	6 Marks
	b)	Derive the Bragg's law and describe the x-ray powder diffraction method.	8 Marks

UNIT-III

5	a)	Describe the GP Thomson's experiment to demonstrate the wave nature of a particle.	6 Marks
	b)	What are the properties of matter waves and how they are different from electromagnetic waves? Calculate the wavelength associated with an electron subjected to a potential difference of 150 KV.	8 Marks
		(OR)	
6	a)	Explain qualitatively the concept of allowed energy bands in solids using the Kronig - Penny model and discuss conclusions of the model.	10 Marks
	b)	Write down the Fermi - Dirac equation for the probability of occupation of an energy level ***E*** by an electron. How does it vary with temperature?	4 Marks

UNIT-IV

7	a)	Discuss the frequency dependence of polarizability.	6 Marks
	b)	Write essay on ferroelectrics.	8 Marks
		(OR)	
8	a)	Derive the drift and diffusion currents in semiconductors.	6 Marks
	b)	Describe the principle with diagram of LED devices.	8 Marks

UNIT-V

9	a)	Explain the behavior of a superconductor in an external magnetic field and discuss how Messiner effect contradicts Maxwell's equations.	7 Marks
	b)	Explain ferromagnetic Hysterisis on the basis of Weiss domain theory in detail.	7 Marks
		(OR)	
10	a)	Describe Bottom Up and Top Down techniques for preparation of Nano	7 Marks

Materials.

b) Explain Synethesis of nano- Material by Sol - Gel method. 7 Marks

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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)	How composites are advantageous over normal materials? What are the different constituents available in the composite?	7 Marks
	b)	What are important applications of composites? Give some specific examples.	7 Marks

(OR)

2	a)	What are insulators? Differentiate between the different types of insulating materials.	7 Marks
	b)	What are important characteristics of insulating materials? How they are classified?	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)	Explain any two boiler troubles.	7 Marks
	b)	1 gm of $CaCO_3$ was dissolved in dilute HCl and the solution diluted to 1 liter. Then 100 ml of this solution required 90 ml of EDTA solution. Also, 100 ml of water sample required 36 ml of same EDTA solution. The water sample after boiling was titrated against 18 ml of EDTA solution. Calculate the total hardness of water sample.	7 Marks

UNIT-III

5	a)	What is meant by standard Reduction Potential? Explain its significance.	7 Marks
	b)	What is galvanic cell and how does it differ from electrochemical cell?	7 Marks

(OR)

6	a)	Define reference electrode? What is its importance in the measurement of EMF of a cell? Explain by taking suitable example.	8 Marks
	b)	Describe the hydrogen electrode and answer the following: i) Why is this electrode coated with a layer of platinum black? ii) What is the concentration of HCl and pressure of the hydrogen gas taken in normal hydrogen electrode.	6 Marks

UNIT-IV

7	a)	What is gaseous fuel? Write the composition and uses of different gaseous fuels.	7 Marks
	b)	What is lubricant? Explain the mechanism of lubrication.	7 Marks

(OR)

8	a)	How do you measure viscosity using Redwood viscometer?	8 Marks
	b)	Explain how refining of petroleum is carried out.	6 Marks

UNIT-V

9	a)	Describe plasma enhanced chemical vapour deposition method for the preparation of nano materials.	7 Marks
	b)	Explain principles of Green Engineering.	7 Marks

(OR)

10	a)	Discuss the electrical and optical properties of nano materials.	7 Marks
	b)	Give an account on Green Manufacturing system.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech (SVEC14) Regular/Supplementary Examinations April - 2016

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: $r\sin\theta\, d\theta + (r^3 - 2r^2\cos\theta + \cos\theta)dr = 0.$ 7 Marks

b) Solve: $y'' - 6y' + 9y = \frac{e^{3x}}{x^2}$ by the method of variation of parameters. 7 Marks

(OR)

2 a) Solve: $y'' + 4y' + 4y = 3\sin x + 4\cos x,\ y(0) = 1$ and $y'(0) = 0.$ 7 Marks

b) Find the orthogonal trajectories of the cardioids $r = a(1 - \cos\theta).$ 7 Marks

UNIT-II

3 a) If $x = r\sin\theta\cos\phi, y = r\sin\theta\sin\phi, z = r\cos\theta$, *find* $J = \frac{\partial(x,y,z)}{\partial(r,\theta,\phi)}$ 7 Marks

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

(OR)

4 a) Trace the curve $y = x + \frac{1}{x}$ 7 Marks

b) Find the radius of curvature of the curve $x^2y = a(x^2 + y^2)$ *at* $(-2a, 2a)$ 7 Marks

UNIT-III

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

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

(OR)

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

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

UNIT-IV

7 a) Find the Laplace transform of: 7 Marks

(i) $\cos^3 4t$

(ii) $e^{-3t}.\ t^2\ .\ \sin(t)$

b) Solve $y'' + 2y' + y = 3x\ .\ e^{-x}$ given $y(0)=4,\ y'(0)=0$. 7 Marks

(OR)

8 a) Find the inverse Laplace transform of (i) $\cot^{-1}(s)$ (ii) $\frac{s}{(s^2+9)^2}$ 7 Marks

b) Solve $y'' - 3y' + 2y = 4t + e^{3t}$ given $y(0) = 1,\ y'(0) = -1$, using Laplace transform. 7 Marks

UNIT-V

9 a) Show that the vector field $\overline{F} = (x^2 + xy^2)\,\vec{i} + (y^2 + x^2y)\,\vec{j}$ is irrotational and find a scalar potential φ such that $\overline{F} = \nabla\phi$ 7 Marks

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

(OR)

10 a) Apply Gauss divergence theorem to evaluate $\iint_S (x+z)dydz + (y+z)dzdx + (x+y)dxdy$ where *S* is the surface of the sphere $x^2 + y^2 + z^2 = 4$. 7 Marks

b) Evaluate $\iiint_V (x^2 + y^2 + z^2)\,dx\,dy\,dz$ where *V* is the volume of the cube bounded by the coordinate planes and the planes $x = y = z = a$. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech (SVEC14) Regular/Supplementary Examinations April - 2016

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 a matrix $\begin{bmatrix} 3 & -4 & -1 & 2 \\ 1 & 7 & 3 & 1 \\ 5 & -2 & 5 & 4 \\ 9 & -3 & 7 & 7 \end{bmatrix}$ by reducing it to echelon form. 7 Marks

b) Determine the values of ***a*** and ***b*** for which the system $3x - 2y + z = b$; $5x - 8y + 9z = 3$, $2x + y + az = -1$ **(i)** has a unique solution **(ii)** has no solution and **(iii)** has infinitely many solutions. 7 Marks

(OR)

2 a) Find the characteristic equation of the matrix $A = \begin{bmatrix} 1 & 1 & 3 \\ 1 & 3 & -3 \\ -2 & -4 & -4 \end{bmatrix}$ and hence find its inverse. 7 Marks

b) Reduce the quadratic form $6x^2 + 3y^2 + 3z^2 - 4xy - 2yz + 4xz$ to the sum of squares form. Also find its index and signature. 7 Marks

UNIT-II

3 a) Find by regula-falsi method, a root of the equation $x^3-3x+1=0$, correct to 3 decimal places. 7 Marks

b) A simply supported beam carries a concentrated load P (lb) at its mid point. Corresponding to various values of P, the maximum deflection y (inches) is measured. The data are given below: 7 Marks

P	100	120	140	160	180	200
Y	0.45	0.55	0.60	0.70	0.80	0.85

Find a law of the form $y = a + bp$.

(OR)

4 a) The following table gives the marks of the students in course differential equations in university external examinations 2013. Estimate the number of students who obtained marks between 40 and 45 also between 70 and 75. 7 Marks

Marks	30-40	40-50	50-60	60-70	70-80
No. of students	31	42	51	35	31

b) The following data gives the melting points of an alloy of lead and zinc: 7 Marks

Percentage of lead in the alloy (p):	50	60	70	80
Temperature(Q ^oC):	205	225	248	274

Find the melting point of the alloy containing 54% and 79% of lead using suitable interpolation formulae.

UNIT-III

5 a) The following data gives the velocity of a particle for 20 seconds at an interval of 5 seconds. Find the initial acceleration using the entire data; 7 Marks

Time t (sec):	0	5	10	15	20
Velocity V(m/sec)	0	3	14	69	228

b) Given that $dy/dx = x^2 + y$ and $y(0) = 1$, Find an approximate value of $y(0.1)$ taking $h = 0.05$ by modified Euler's method. 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) Express the following function as a Fourier series : $f(x) = \begin{cases} 1 + 2x/\pi ; -\pi \le x \le 0 \\ 1 - 2x/\pi ; 0 \le x \le \pi \end{cases}$ 7 Marks

b) Using Z-transform, solve $u_{n+2} + 4u_{n+1} + 3u_n = 3^n$ with $u_0 = 0, u_1 = 1$. 7 Marks

(OR)

8 a) Find the Fourier transform of $f(x) = \begin{cases} 1 - |x|; & |x| < 1 \\ 0; & |x| > 1 \end{cases}$. 7 Marks

b) Evaluate $Z^{-1}\left(\frac{z^2}{(z-4)(z-9)}\right)$, by using convolution theorem. 7 Marks

UNIT-V

9 a) Form the partial differential equation for $z = yf(x) + xg(y)$ 7 Marks

b) Solve the one dimensional heat flow equation $\frac{\partial u}{\partial t} = C^2 \frac{\partial^2 u}{\partial x^2}$ given that 7 Marks

$u(x,0) = u(L,t) = 0, t > 0$ and $u(x,0) = 3\sin\frac{\pi x}{L}, 0 < x < L$.

(OR)

10 a) Solve by the method of separation of variables $\frac{\partial u}{\partial x} = 2\frac{\partial u}{\partial t} + u$, where $u(x,0) = 6e^{-3x}$. 7 Marks

b) A tightly stretched string with fixed end points x=0 and x=k is initially at its rest in its equilibrium position. If it is set to vibrate by giving each of its points a velocity $\lambda x(k - x)$, find the displacement of the string at any distance x from one end at any time. 7 Marks

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I B.Tech (SVEC14) Regular/Supplementary Examinations April – 2016

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)	What is programming language? What is its analogy to English language? Give its classification.	7 Marks
	b)	Discuss various flowchart notations with illustrations.	7 Marks
		(OR)	
2	a)	How C language has been standardized? How programs can be developed?	7 Marks
	b)	Explain Bitwise operators with suitable code segments.	7 Marks

UNIT-II

3	a)	Explain with example where a 'for' loop is suitable and where a 'do-while' loop is suitable.	7 Marks
	b)	Describe the Program Control Statements/Constructs in C.	7 Marks
		(OR)	
4	a)	Explain the different types of loops in C with syntax and example.	7 Marks
	b)	Write a C program to print the sum of the series 1+2+3+4….up to *n* terms.	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)	Describe the graphical representation of memory elements of a C program.	7 Marks
	b)	What is a file? Explain how the file open and file close functions handled in C.	7 Marks
		(OR)	
8	a)	Write a short notes on malloc () and calloc () functions.	7 Marks
	b)	Write a C Program to create a file of numbers and copy odd number into second file and even number into third file.	7 Marks

UNIT-V

9	a)	Write a C program to implement the doubly linked list.	10 Marks
	b)	Write the applications of tree.	4 Marks

(OR)

10	a)	Consider the inorder and preorder traversal of a binary search tree are (1, 2, 3, 4, 5, 6, 8, 10, 25) and (4, 3, 1, 2, 10, 8, 5, 6, 25), respectively. Construct the unique binary search tree for the given inorder and preorder traversals.	6 Marks
	b)	The ENQUEUE and DEQUEUE operations of a queue Q inserts and deletes one item at a time. Consider a specialized queue Q', where the ENQUEUE and DEQUEUE of Q' inserts and deletes an arbitrary number of items (but it follows the principle of queue - if in its first ENQUEUE if two elements are inserted then it has to delete those two elements at first DEQUEUE operation, in the second ENQUEUE if it inserts three elements then in his second DEQUEUE operation it has to delete those three elements, etc.). Define a structure for Q' and write the C code of ENQUEUE and DEQUEUE operations of Q'.	8 Marks

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I B.Tech (SVEC14) Regular/Supplementary Examinations April – 2016

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)	Define flow chart and explain with example.	7 Marks
	b)	Draw a flow chart to find the largest of three numbers.	7 Marks
		(OR)	
2	a)	Explain the four basic data types of constants in C.	7 Marks
	b)	Write a C program to find the biggest of the given three numbers and also print their sum and average.	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 an array? What are the different types of arrays in C language?	7 Marks
		(OR)	
6	a)	What is a function? Explain about Basic function design with an example.	7 Marks
	b)	Write a C program to reverse a sentence using recursion.	7 Marks

UNIT-IV

7	a)	Explain about *call by value* with a C program.	7 Marks
	b)	Write a C program for demonstrating how an array of elements can be passed using pointers.	7 Marks
		(OR)	
8	a)	What is a pointer? Explain with an example to explain the working of pointers.	7 Marks
	b)	Write a short notes on malloc () and calloc () functions.	7 Marks

UNIT-V

9	a)	Explain any four file handling functions.	7 Marks
	b)	Write a program to count number of lines in a file.	7 Marks
		(OR)	
10	a)	Define queue. Write the applications of queue.	5 Marks
	b)	Write a program to perform insert and delete operations on queue.	9 Marks

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CODE No.:14BT1HS01 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC14) Regular/Supplementary Examinations April - 2016

TECHNICAL ENGLISH

[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	Summarize Abdul Kalam's 'My Early Days' in your own words.	14 Marks
	(OR)	
2	Explain the process of communication with a diagram.	14 Marks

UNIT-II

3	What are the two unplanned events in Mr. Narayana Murthy's life? How did they turn out to be a turning point in his career?	14 Marks
	(OR)	
4	Discuss the importance of listening for a student and a manager. Who should have the “art of listening” better, student or manager? Why?	14 Marks

UNIT-III

5	Give a brief account of Amitav Ghosh's 'The Town by the Sea'.	14 Marks
	(OR)	
6	Write a note on the barriers to spoken communication.	14 Marks

UNIT-IV

7	Sir C. V. Raman is a celebrated genius. Justify.	14 Marks
	(OR)	
8	What are the reasons for poor reading comprehension? Write a note on how to improve comprehension skills.	14 Marks

UNIT-V

9	What kind of a girl is Laura Merton? Does Hughie deserve Laura? If yes, then why did Colonel, Laura's father, have objections? Is Colonel right in the condition he gave for their marriage? Support your answers with reasons.	14 Marks
	(OR)	
10	What are the elements of good writing style? What kind of language has to be used to write a good essay / text of any kind?	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC14) Regular/Supplementary Examinations April - 2016

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 Reduce the forces shown Fig.1 to a single force and couple acting at A. B=2.5m; BC=1.5m; CD=1.0m and DE=3.0m. 14 Marks

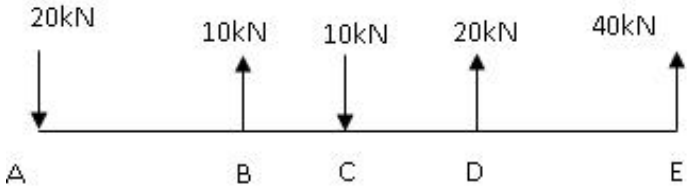

Fig. 1

(OR)

2 A block weighing 1000N is to be raised by means of a 15° wedge B weighing 500N as shown in Fig. 2**.** Determine the minimum horizontal force P required to raise the block when the coefficient of friction between all contact surfaces is 0.2. 14 Marks

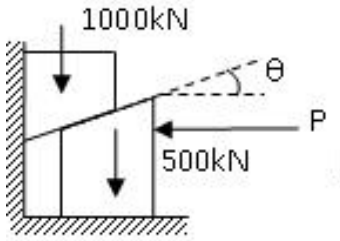

Fig. 2

UNIT-II

3 Determine the forces in the members of the truss shown in Fig.3. Height of the truss is 4m. 14 Marks

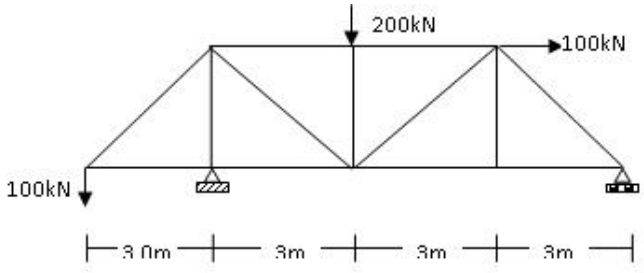

Fig. 3

(OR)

4 Determine the forces in the members of the truss shown in Fig.4. Height of the truss is 3m. 14 Marks

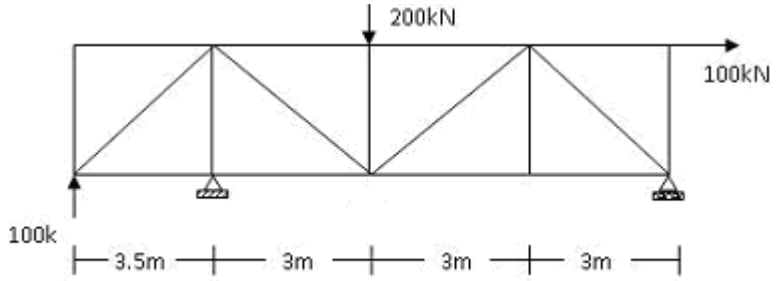

Fig. 4

UNIT-III

5 a) Explain the method of finding the centre of gravity of a body. 4 Marks

b) A right circular cylinder of 10cm diameters joined with a hemisphere of the same diameter face to face. Find the greatest height of the cylinder so that CG of the composite section coincides with the plane of joining the two sections. The density of the material of the hemispherical part is twice the density of the material of the cylinder. 10 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 150 mm × 50 mm and web of 150 mm × 50 mm about X - X and Y - Y axis through the center of gravity of section. 10 Marks

UNIT-IV

7 a) Draw the motion curves and represent the motion of particle graphically. 6 Marks

b) A bomb is released from an aeroplane flying at a speed of 1000 kmph over a straight level course 2000 m above the ground. Find the time required to reach the ground and the horizontal distance traveled by the bomb after its release. 8 Marks

(OR)

8 a) A train traveling at 96 kmph has to slow down on account of work being done on the line. Instead of continuing at constant speed, it moves with constant retardation of 1.6 kmph per second until the speed is reduced to 24 kmph. It then travels at a constant speed for 400 m and then accelerates at 0.8 kmph per second until its speed is once more 96 kmph. Find the delay period. 14 Marks

UNIT-V

9 A cylinder, a circular hoop, and a sphere each having mass M and radius R are released from rest along a rough plane having inclination β. If in each case rolling occurs without slipping, compare the accelerations of mass centres of these three objects. Determine their ratios also. 14 Marks

(OR)

10 a) Define the Newton Laws of motion for linear motion and rotational motion. 4 Marks

b) A train of weight 2000 kN starts from rest and attains a speed of 100 km/hr in 4 minutes. If the frictional resistance of the track is 8 N per kN of the train's weight, find the average pull required. Take g = 9.8 m/sec^2. 10 Marks

CODE No.:10BT1BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Supplementary Examinations April - 2016

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) Discuss on the defects in crystals.
b) Bragg's law concept and its purpose.

2. a) Using de-Broglie's hypothesis, write on the formation of Heisenberg's uncertainity principle $\Delta x.\Delta p \geq \hbar/2$.
b) Write on Fermi-Dirac distribution.

3. a) Explain the concepts: Drift and Diffusion in semiconductors.
b) State and explain the Hall effect in semiconductors.

4. a) With suitable examples, explain the classification of magnetic materials.
b) Derive the Clausius-Mossotti equation and explain its significance.

5. a) What are the basic requirements for acoustically good hall?
b) Explain the Sabine's formula for reverberation time.
c) What is meant by acoustic quieting? Explain.

6. a) Explain Ruby Laser?
b) The superconducting transition temperature of Tin is 3.7 K. Its critical Magnetic field at 0 K is 0.03 Tesla. What is the critical magnetic field at 2.5 K.
c) What is superconductivity?

7. a) Explain the terms: Acceptance angle and Acceptance cone in an optical fiber.
b) Distinguish between the step-index and graded-index fibers.
c) What is a hologram? Mention its applications.

8. a) Elaborate briefly on nanomaterials, and their applications.
b) Describe any one method of fabrication of nanomaterials.

CODE No.:10BT1BS02

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Supplementary Examinations April - 2016

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. Discuss in detail the mechanism of lubrication.

2. a) Distinguish between thermoplastics and thermosetting plastics.
b) Explain the mechanism of vulcanization of rubber.

3. a) Derive Nernst equation and give its significance.
b) Give an account on lithium batteries.

4. a) Write the characteristics of pitting corrosion of metals.
b) Describe how electro-less plating of copper is carried out. Mention its advantages.

5. a) Derive Langmuir adsorption isotherm equation and mention how the surface area of an adsorbent is calculated from slope and intercept of Langmuir's plot.
b) Write the important applications of colloidal dispersions.

6. a) Explain chemical shift in NMR Spectroscopy.
b) Give the applications of Flame Photometry.

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

8. What is hardness? Explain its estimation by EDTA method.

CODE No.:10BT1BS03

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Supplementary Examinations April - 2016

ENGINEERING MATHEMATICS

[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) Solve the differential equation $\frac{dy}{dx}(x^2y^3 + xy) = 1$.

b) Find the orthogonal trajectories of the family of curves $\mathbf{r^n = a^n \cos n\theta}$.

2. Solve the differential equation $(D^2 + 1)\,y = \operatorname{cosec} x$ by the Method of Variation of parameters.

3. a) If $u = x^2 - 2y, v = x + y + z, w = x - 2y + 3z$, then find $\frac{\partial(u,v,w)}{\partial(x,y,z)}$.

b) Find the maximum value $x^m y^n z^p$ when x + y + z = a.

4. a) From any point of the ellipse $\mathbf{x^2/a^2 + y^2/b^2 = 1}$, perpendiculars are drawn to the coordinate axes. Show that the envelope of the straight line joining the feet of these perpendiculars is $(x/a)^{2/3} + (y/b)^{2/3} = 1$.

b) Trace the curve $\mathbf{y^2(a+x) = x^2(3a - x)}$.

5. a) Find Laplace transform of $\mathbf{t\,e^{2t} \sin 3t}$.

b) Using convolution theorem evaluate $L^{-1}\{1/s(s^2+2s+2)\}$.

6. a) Use Laplace transform method to solve $\frac{d^2x}{dt^2} - 2\frac{dx}{dt} + x = e^t$ with x = 2, $\frac{dx}{dt} = -1$ at t = 0.

b) Find the inverse Laplace transform of $\log\frac{s+1}{s-1}$.

7. a) Find the Volume of the tetrahedron bounded by the planes x = 0, y = 0, z = 0 and $\frac{x}{a} + \frac{y}{b} + \frac{z}{c} = 1$.

b) Change the order of integration in $I = \int_0^1 \int_0^{\sqrt{1-x^2}} y^2\,dx\,dy$ and hence evaluate the same.

8. a) Prove that $\nabla\left\{\frac{f(r)\bar{r}}{r}\right\} = \frac{1}{r^2}\frac{d(r^2 f(r))}{dr}$.

b) Use Green's theorem to evaluate $\int_C (x^2ydx + x^2dy)$, where C is the boundary described counter clock wise of the triangle with vertices (0,0) (1,0), (1,1).

CODE No.:10BT1BS04

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Supplementary Examinations April - 2016

MATHEMATICAL METHODS

[Electrical and Electronics 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) Prove that the matrix $\begin{bmatrix} \cos\theta & 0 & \sin\theta \\ 0 & 1 & 0 \\ \sin\theta & 0 & \cos\theta \end{bmatrix}$ is orthogonal.

b) Determine the value of λ for which the following set of equations may possess non-trivial solution: $3x_1 + x_2 - \lambda x_3 = 0,\ 4x_1 - 2x_2 - 3x_3 = 0,\ 2\lambda x_1 + 4x_2 + \lambda x_3 = 0$, for each permissible value of λ ,determine the general solution.

2.

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

b) Reduce the quadratic form $7x^2 + 6y^2 + 5z^2 - 4xy - 4yz$ to the canonical form.

3.

a) Evaluate $\sqrt{12}$ and $1/\sqrt{12}$ by the fixed point iteration method.

b) Fit a parabola of the form $y = a + bx + cx^2$ to the following data.

x	1	2	3	4	5	6	7
y	23	5.2	9.7	16.5	29.4	35.5	54.4

4. a) If f(x) is a polynomial of degree n and the values of x are equally spaced, then prove that Δ^n f(x) is a constant.

b) Find y(10) for the following data by Lagrange's Interpolation method

x	5	6	9	11
y	12	13	14	16

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. a) Solve $y' = x^2 - y,\ y(0) = 1$ using Taylor's series method and compute $y(0.1)$, $y(0.2)$, $y(0.3)$, *and* $y(0.4)$, (correct to 4 decimal places).

b) Obtain the values of y at x = 0.1, 0.2 using Runge-kutta method of second order for the differential equation $y' + y = 0,\ y(0) = 1$.

7. a) If $Z(u_n) = \frac{z}{z-1} + \frac{z}{z^2-1}$ then find $\mathbf{Z(u_{n+2})}$.

b) Using Z-transforms, solve $\mathbf{y_{n+2} - 5.y_{n+1} + 6.y_n = u_n}$, $\mathbf{y_0 = 0, y_1 = 1}$ and $\mathbf{u_n = 1}\ \forall\ \mathbf{n}$.

8. a) Obtain a Fourier series for $f(x) = |x| \qquad -\pi \le x \le \pi$.

b) Find the Fourier sine transform of $e^{-|x|}$ and hence show that $\int_0^\infty \frac{x.\sin mx}{1+x^2}dx = \frac{\pi}{2}e^{-m}$ for m > 0.

CODE No.:10BT1EC01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Supplementary Examinations April – 2016

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. Write the difference between hardware and software? Mention any two hardware devices necessary in any computer system and also mention any two software used in a computer.

2. a) Define constant. Give constant representations for character and string.
b) What is a statement in C? Give different types of statements with examples.

3. a) Write a C program print the biggest number among given three numbers.
b) What is multi-way selection? How is it different from two-way selection? Give examples for both the selection statements.

4. Write a C program for converting a given decimal number into its equivalent binary number.

5. Write a C program for binary search.

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) With an example, demonstrate how addresses are passed between functions using pointers.
b) Explain malloc() and calloc() functions used to dynamically allocate memory.

8. a) Explain command line arguments with an example.
b) Write a program to implement linear queue operations.

CODE No.:10BT10101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Supplementary Examinations April - 2016

ENGINEERING MECHANICS

[Civil Engineering, Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Distinguish between
(i) concurrent forces and non-concurrent forces.
(ii) like parallel force system and unlike parallel force system.
b) The resultant of the two forces, when they act at 60° is 14N. If the same forces are acting at right angles, their resultant is $\sqrt{136}$ N. Determine the magnitude of the two forces.

2. Calculate support reactions at A and B in Fig.1.

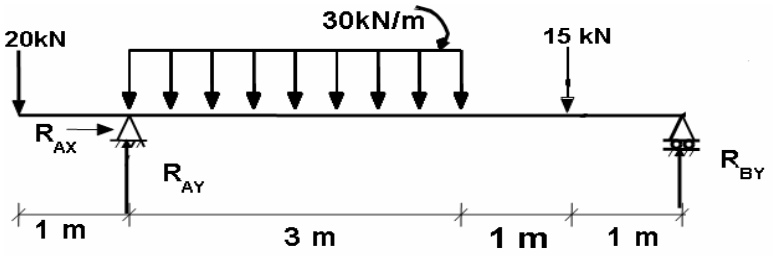

Fig 1.

3. a) What is friction? Discuss the advantages and disadvantages of friction.
b) The uniform 100N ladder rests on the rough floor for which the coefficient of static friction is $\mu_s = 0.4$ and against the smooth wall at B as shown in Fig.2. Determine the horizontal force P the man must exert on the ladder in order to cause it to move.

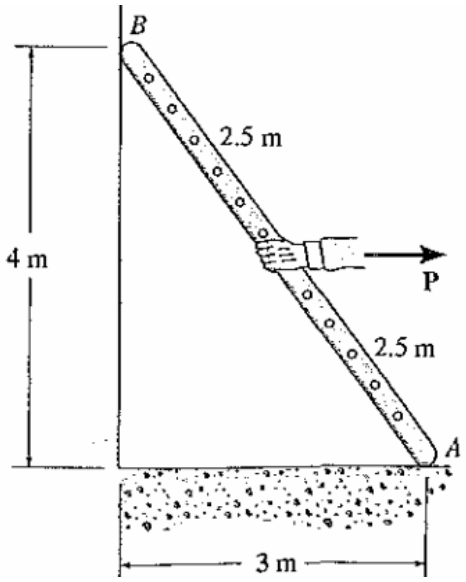

Fig. 2

4. A smooth circular cylinder of weight Q and radius r is supported by two semicircular cylinders each of the same radius r and weight Q/2, as shown in Fig. 3. If the coefficient of static friction between the flat faces of the semicircular cylinders and the horizontal plane on which they rest is $\mu = 0.5$ and friction between the cylinders themselves is neglected, determine the maximum distance b between the centers B and C for which equilibrium will be possible without the middle cylinder touching the horizontal plane.

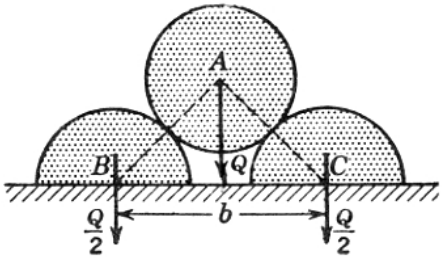

Fig. 3

5. Determine the volume of the body shown in Fig. 4 using theorem of Pappus.

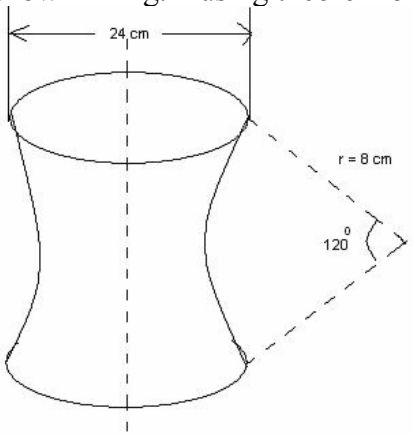

Fig. 4

6. Calculate moment of inertia of a triangle about its base, vertex and about a line parallel to base and passing through centroid of the triangle.

7. a) If the ***x*** and ***y*** components of a particle's velocity are $v_x = (32t)$ m/s and $v_y = 8$ m/s, determine the equation of the path $y = f(x)$. $x = 0$ and $y = 0$ when $t = 0$.

b) A projectile is fired with a speed of $v = 60$ m/s at an angle of 60°. A second projectile is then fired with the same speed 0.5 s later. Determine the angle θ of the second projectile so that the two projectiles collide. At what position (x, y) will this happen?

8. Fig. 5 shows a 2kg mass resting on a smooth plane inclined 20° to the horizontal. A cord which is parallel to the plane passes over a massless, frictionless pulley to a 4kg mass which will drop vertically when released. What will be the speed of the 4kg mass 4 s after it is released from rest?

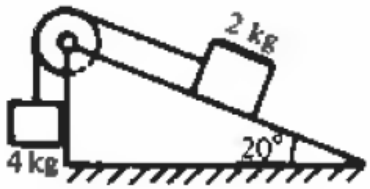

Fig. 5

CODE No.:10BT1BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Supplementary Examinations November - 2015

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) Obtain Bragg's law for X-ray diffraction in crystals. Explain how it is verified experimentally.
b) In a crystal whose primitives are 1.2 A^0, 1.8 A^0 and 2.0 A^0. A plane (2 3 1) cuts an intercept 1.2 A^0 on X-axis. Find the corresponding intercepts on the Y and Z-axes.

2. a) Derive Schrodinger's time independent wave equation.
b) State and explain uncertainty principle.

3. a) What is a semiconductor? Explain intrinsic and extrinsic semiconductors.
b) What are drift and diffusion?
c) What is doping?

4. What are the hysteresis diagrams of a ferromagnetic, antiferromagnetic and paramagnetic materials?

5. Write an essay on the aspects involved in acoustic quieting and also on various methods employing in acoustic quieting.

6. Write a short notes on:
(i) Ruby laser.
(ii) He-Ne laser.
(iii) Semiconductor laser.

7. a) What is Holography? Explain the construction and working of a hologram.
b) Determine the numerical aperture of step index fiber when the core refractive index n_1 = 1.5 and the cladding refractive index n_2= 1.48. Find the maximum angle for entrance of light if the fiber is placed in air.
c) What is total internal reflection?

8. a) Discuss in detail, the technique of chemical vapor deposition.
b) What are the applications of nano materials?

CODE No.:10BT1BS02

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Supplementary Examinations November - 2015

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. a) Explain the following properties of lubricants with their significance.
(i) Flash and fire points,
(ii) Aniline point.
b) Give the classification of liquid crystals.

2. a) Narrate the polymerization process.
b) Describe the applications of polyurethane.

3. a) Explain the method for the determination of the EMF of a cell.
b) Distinguish between reversible and irreversible cells.

4. a) Explain various types of corrosion.
b) Write a note on the uses of inhibitors in controlling corrosion.

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

6. a) Explain the role of dimensionality in determining the properties of nano materials. Give examples.
b) Describe sol-gel process for preparation of nano materials.

7. Describe the principle and applications of N M R Spectroscopy.

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.

CODE No.:10BT1BS03

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Supplementary Examinations November - 2015

ENGINEERING MATHEMATICS

[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]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Solve $2xy\frac{dy}{dx} = y^2 - 2x^3, y(1) = 2.$

b) If a substance cools from 370 K to 330 K in 10 mts, when the temperature of the surrounding air is 290 K, find the temperature of the substance after 40 mts.

2. a) Solve : $\mathbf{y''' + 2y'' - y' - 2y = 1 - 4x^3}$

b) Solve the differential equation $(D^2 + 1)\ y = \mathbf{cosec}\ x$ by the Method of Variation of parameters.

3. a) Show that the functions $\mathbf{u = x + y + z}$, $\mathbf{v = x^2 + y^2 + z^2 - 2xy - 2yz - 2zx}$ and $\mathbf{w = x^3 + y^3 + z^3 - 3xyz}$ are functionally related.

b) Find the shortest distance from origin to the surface $xyz^2 = 2$.

4. a) Find the radius of curvature at the point $\left(\frac{3a}{2}, \frac{3a}{2}\right)$ of the curve $x^3 + y^3 = 3axy$.

b) Trace the curve $\mathbf{y^2(2a-x) = x^3}$.

5. a) Evaluate (i) $\mathbf{L\{e^{-2t}\cos t\}}$ (ii) $\mathbf{L^{-1}\{\log(1 + 1/s^2)\}}$.

b) Using convolution theorem, find $\mathbf{L^{-1}\{s/(s^2+a^2)^2\}}$.

6. a) Using Laplace transform solve the differential equation
$\mathbf{d^2y/dt^2 + 2\,dy/dt + 5y = e^{-t}\sin t}$, given that $\mathbf{y(0) = 0, y'(0) = 1}$.

b) By applying Heavisides expansion formula, find $L^{-1}\left(\frac{19s + 37}{(s+1)(s-2)(s+3)}\right)$.

7. a) Find the Volume of the tetrahedron bounded by the planes x = 0, y = 0, z = 0 and $\frac{x}{a} + \frac{y}{b} + \frac{z}{c} = 1$.

b) Change the order of integration in $I = \int_0^1 \int_0^{\sqrt{1-x^2}} y^2\,dx\,dy$ and hence evaluate the same.

8. a) Show that $\nabla^2(r^m) = m(m+1)r^{m-2}$

b) Evaluate by Greens theorem $\oint_C (y - \sin x)\,dx + \cos x\,dy$ where C is the triangle enclosed by the lines $\mathbf{y = 0, x = \pi/2}$ and $\mathbf{\pi y = 2x}$.

CODE No.:10BT1BS04

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Supplementary Examinations November - 2015

MATHEMATICAL METHODS

[Electrical and Electronics 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) Reduce the Matrix $\begin{pmatrix} 5 & 3 & 14 & 4 \\ 0 & 1 & 2 & 1 \\ 1 & -1 & 2 & 0 \end{pmatrix}$ into Echelon form and hence find its Rank.

b) Solve the following system of equations by the method of factorization.
$3x + 2y + 7z = 4$, $2x + 3y + z = 5$, $3x + 4y + z = 7$.

2. a) Prove that a square matrix A and its transpose A^T have the same eigen values.

b) Reduce the quadratic form $x^2 + 4y^2 + z^2 + 4xy + 6yz + 2zx$ to canonical form by Orthogonal Transformation and find its rank and signature.

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) From the following table values of x and $y = e^x$ interpolate values of y when x = 1.91.

x	**1.7**	**1.8**	**1.9**	**2**	**2.1**	**2.2**
e^x	**5.4739**	**6.0496**	**6.6859**	**7.3891**	**8.1662**	**9.0250**

b) In the table below the values of ***y*** are consecutive terms of a series of which the number 21.6 is the 6th term. Find the 1st and 10th terms of the series.

x	3	4	5	6	7	8	9
y	2.7	6.4	12.5	21.6	34.3	51.2	72.9

5. a) The following data gives corresponding values of pressure (p) and specific volume (v) of superheated steam

v:	2	4	6	8	10
p:	10.5	42.7	25.3	16.7	13

find the rate of change of pressure with respect to volume, when v = 2.

b) The velocities of a car (running on straight road) at intervals of 2 minutes are given below

Time in minutes :	0	2	4	6	8	10	12
Velocity in km/hr:	0	22	30	27	18	7	0

apply Simpson's rule to find the distance covered by the car in 12 minutes.

6. Given that $y' = 1 + xy^2$, y (0) = 1 , find y (0.1), y (0.2), y (0.3) by Euler's method and then find the value of y (0.4) by Milne's method.

7. a) Find $Z(\cosh at . \sin bt)$.

b) Find $Z\left[\frac{1}{(n+2)(n+3)}\right]$.

8.

a) If $f(x)=\begin{cases} x & 0 < x < \frac{\pi}{2} \\ \pi - x & \frac{\pi}{2} < x < \pi \end{cases}$ then show that

$$f(x)=\frac{4}{\pi}\left\{\sin x - \frac{1}{3^2}\sin 3x + \frac{1}{5^2}\sin 5x - .....\right\}.$$

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

CODE No.:10BT1BS05

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Supplementary Examinations November - 2015

MATHEMATICS FOR BIOTECHNOLOGISTS

[Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) To express $\sinh^{-1} x,\ \cosh^{-1} x$ as logarithmic functions.

b) Resolve $\dfrac{x^3}{(2x-1)(x+2)(x-3)}$ into partial fractions.

c) Find the term independent of x in $\left(\dfrac{4x^2}{3}-\dfrac{3}{2x}\right)^9$.

2. a) Test the continuity of the function f(x) at the origin $f(x)=\begin{cases}\dfrac{|x|}{x} & x\neq 0\\ 1 & x=0\end{cases}$.

b) If $y=\sin(a\sin^{-1}x)$ show that $\dfrac{dy}{dx}=2\sqrt{\dfrac{1-y^2}{1-x^2}}$.

3. a) Evaluate $\int\dfrac{5}{(x^2+1)(x+2)}dx$

b) Find the area included between the curves $y^2 = 4ax$ and $x^2 = 4ay$.

4. a) Solve the differential equation $x^2ydx-(x^3+y^3)dy=0$.

b) If the air is maintained at 30^0C and the temperature of the body cools from 80^0C to 40^0C in 12 minutes, find the temperature of the body after 24 minutes.

5. a) Solve $\dfrac{d^4y}{dx^4}-y=\cos x\cosh x$.

b) Solve $y''-6y'+9y=e^{3x}/x^2$ by the method of variation of parameters.

6. a) i) Find $L[t\sin^2 t]$. ii) Find $L^{-1}\left[\dfrac{e^{-s}}{(s+1)^3}\right]$.

b) Using Convolution theorem, evaluate $L^{-1}\left[\dfrac{1}{(s-2)(s+2)^2}\right]$.

7. a) Solve by the method of transforms, the equation $y'''+2y''-y'-2y=0$ given $y(0)=y'(0)=0$ and $y''(0)=6$

b) Solve the following simultaneous equations by using Laplace transforms $\dfrac{dx}{dt}-y=e^t, \dfrac{dy}{dt}+x=\sin t$, given $x(0)=1$, $y(0)=0$.

8. a) Verify Green's theorem for $\oint_c (xy+y^2)\,dx+x^2dy$ where c is bounded by $y=x$ and $y=x^2$.

b) A vector field is given by $A=(x^2+xy^2)\,\hat{i}+(y^2+yx^2)\,\hat{j}$. Show that the field is irrotational, and find the scalar potential. Evaluate the line integral from $(0,1)$ to $(1,2)$.

CODE No.:10BT1EC01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Supplementary Examinations November - 2015

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) Define the following:
i) Application Software ii) System Software iii) Linker
iv) preprocessor v) Loader vi) Macro processor vii) Hardware
b) Explain the significance of Top down design concept.

2. a) Explain the rules of a valid identifier.
b) With an example, explain the different data types of C programming language.

3. a) Write a C program print the biggest number among given three numbers.
b) What is multi-way selection? How is it different from two-way selection? Give examples for both the selection statements.

4. a) Write a program to generate Fibonacci sequence.
b) Write a program to convert a given decimal number in to binary form.

5. a) Write a C program for binary search.
b) Define String. Write about data to string and string to data conversion with suitable 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) What is the difference between array of pointers and pointer to an array? What are the different ways for allocating memory for variables dynamically and write the syntax of each of them.
b) Write a C program for demonstrating how an array of elements can be passed using pointers.

8. a) Write a C program to remove the first n characters from the file.
b) Write a C program for implementing single-linked list operations.

CODE No.:10BT10101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Supplementary Examinations November - 2015

ENGINEERING MECHANICS

[Civil Engineering, Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Distinguish between
(i) concurrent forces and non-concurrent forces.
(ii) like parallel force system and unlike parallel force system.
b) The resultant of the two forces, when they act at 60° is 14 N. If the same forces are acting at right angles, their resultant is $\sqrt{136}$ N. Determine the magnitude of the two forces.

2. Calculate support reactions at A and B shown in Fig. 1.

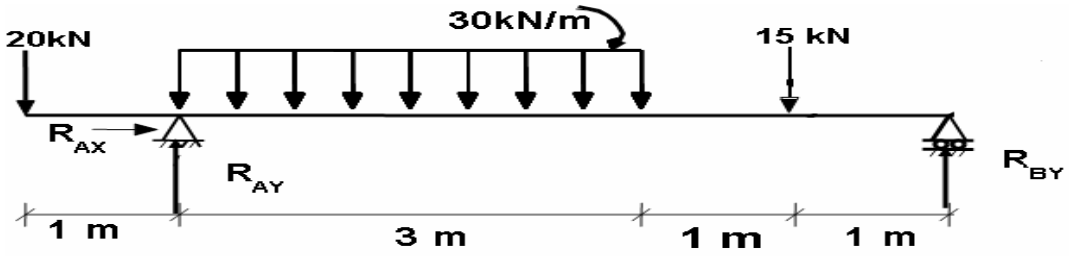

Fig. 1

3. Calculate forces in the members of the truss as shown in Fig. 2.

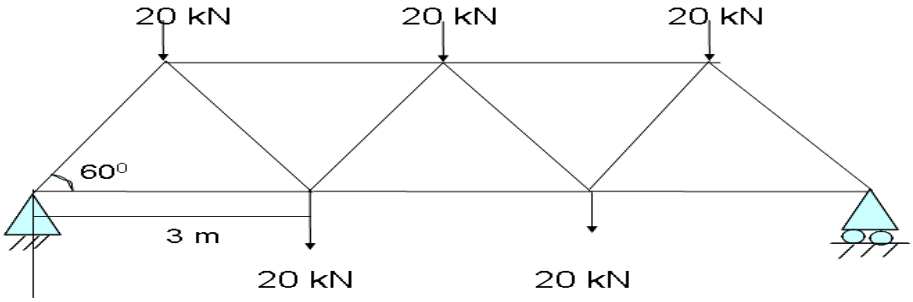

Fig. 2

4. Two blocks connected by a horizontal link AB are supported on two rough planes as shown in Fig.3. The coefficient for friction of block A on the horizontal plane is μ = **0.4.** The angle of friction for block B on the inclined plane is $\varphi = 15^0$**.** What is the smallest weight W of block A for which equilibrium of the system can exist?

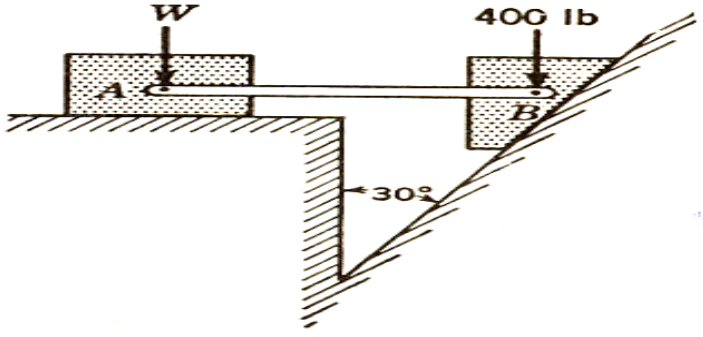

Fig. 3

5. Determine centroid of lamina of uniform thickness as shown in fig. 4

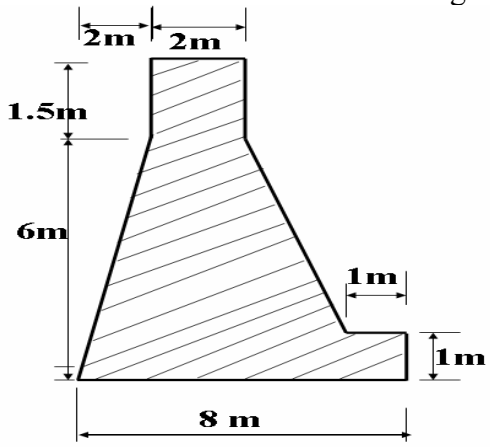

Fig. 4

6. Find the area moment of inertia about the x and y axes of the plane area shown in Fig. 5.

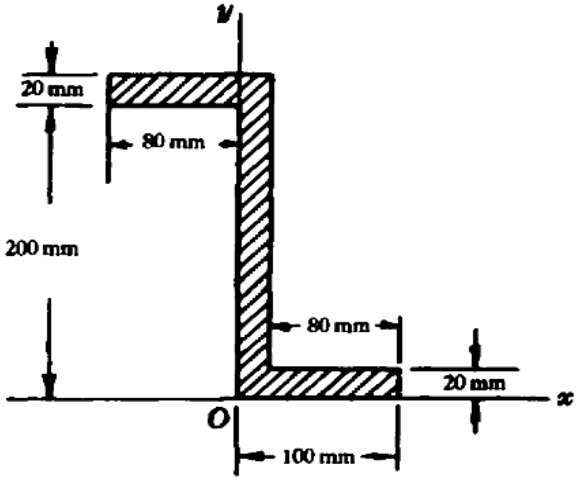

Fig. 5

7. a) A jet-propelled object has straight-line motion according to the equation $\mathbf{x = 2t^3 - t^2 - 2}$, where x is in meters and t is in seconds. What is the change in displacement while the speed changes from 4 m/s to 48 m/s?

b) A body moves along a straight line so that its displacement from a fixed point on the line is given by $\mathbf{s = 3t^2 + 2t}$. Find the displacement, velocity and acceleration at the end of $\mathbf{t = 3s}$.

8. Determine the tension in the string and accelerations of blocks weighing 1500 N and 500 N connected by an inextensible string as shown in fig. 6. Assume pulleys as frictionless and weightless.

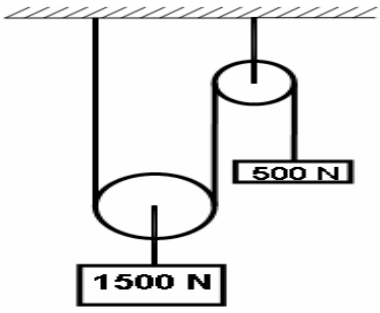

Fig. 6

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech (SVEC14) Supplementary Examinations November - 2015

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) Derive an expression for length contraction from Lorentz transformation equations. 7 Marks

b) Derive Einstein's Mass-Energy equivalence relation. 7 Marks

(OR)

4 a) Describe Laue's experiment for diffraction of X-rays. 5 Marks

b) What are the important features of Miller indices? 9 Marks

Show that $d = \frac{a}{\sqrt{h^2 + k^2 + l^2}}$ of a plane.

UNIT-III

5 a) Explain in detail Wien's law, Ray Leigh-Jeans law and Planck's law. 7 Marks

b) Discuss Heisenberg's uncertainty principle. An electron has a speed of 1.05×10^4 m/sec with an accuracy of 0.02%. Calculate the uncertainty in the position of the electron. 7 Marks

(OR)

6 a) Explain the periodic potential of the lattice on the basis of Kronig-Penny model. 9 Marks

b) Write about the differences among metals, semiconductors and insulators with suitable examples. 5 Marks

UNIT-IV

7	a)	Obtain Clausius-Mosotti equation. The relative dielectric constant of sulphur is 3.75 when measured at 29^{o}C. Calculate the electronic polarizability of sulphur if its density at this temperature is 2050 kg/m^{3}. The atomic weight of sulphur is 32 amu.	9 Marks
	b)	What are the characteristics of ferroelectric materials?	5 Marks

(OR)

8	a)	What is a photo diode? Describe the working of photo diode.	6 Marks
	b)	How can you differentiate intrinsic and extrinsic semiconductors? Derive an expression for the electron concentration in intrinsic semiconductor.	8 Marks

UNIT-V

9	a)	Explain the Hysteresis of ferromagnetism.	6 Marks
	b)	Describe the classification of magnetic materials with properties and examples.	8 Marks

(OR)

10	a)	Explain the general properties of Superconductors.	6 Marks
	b)	Describe the BCS theory. What is the penetration depth?	8 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech (SVEC14) Supplementary Examinations November - 2015

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.	7 Marks
	b)	What is basic principle involved in the electrochemical sensors? Explain glucose potentiometric sensor.	7 Marks

UNIT-II

3	a)	Why do we express hardness of water in terms of calcium carbonate equivalent? Calculate temporary, permanent and total hardness of sample of water containing **$Ca(HCO_3)_2$ = 40.5 mg/L; $Mg(HCO_3)_2$ = 465 mg/L; $MgSO_4$ = 27.6 mg/L; $CaCl_2$ = 22.4 mg/L; $CaSO_4$ = 32.1 mg/L.**	7 Marks
	b)	What are the industrial methods used for softening of water? Explain Ion-Exchange process.	7 Marks
		(OR)	
4	a)	What is meant by carryover? How it can be prevent.	7 Marks
	b)	What is boiler corrosion? How it will be controlled.	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)	What is meant by lubricant? How are lubricants classified? Give examples.	7 Marks
	b)	Explain the viscosity and viscosity index of lubricant with special reference in the selection of good lubricant.	7 Marks
		(OR)	
8	a)	How fuels are classified? What are important characteristics of good fuel? Explain with suitable example	8 Marks
	b)	What is meant by synthetic petrol? How synthetic petrol is prepared by Fischer - Tropsch process	6 Marks

UNIT-V

9	a)	Explain any one method to synthesize nanomaterial.	7 Marks
	b)	Write the advantages of green chemistry.	7 Marks
		(OR)	
10	a)	Write the classification of nanomaterials.	7 Marks
	b)	Explain:	7 Marks
		i) Green manufacturing systems.	
		ii) Tools of green chemistry.	

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech (SVEC14) Supplementary Examinations November - 2015

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 $(1+y^2)dx = (\tan^{-1}y - x)dy$ 7 Marks

b) A radioactive substance disintegrates at a rate proportional to its mass. When mass is 10 m gm, the rate of integrations is 0.051 m gm per day. How long, will it take for the mass to reduce from 10 to 5 m gm. 7 Marks

(OR)

2 a) Solve $\cos x\, dy + y \sin x\, dx = dx$. 7 Marks

b) A metal ball is heated to a temperature at 100^0 C and at time t = 0, it is placed in water which is maintained 40^0 C. If the temperature of the body is reduced to 60^0 C in 4 minutes, find the time at which the temperature of the ball is 50^0 C. 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 length of an arc of the cycloid $x = a(\theta + \sin\theta), y = a(1+\cos\theta)$. 7 Marks

b) Evaluate $\iint_R y dx dy$ where R is the region bounded by the parabolas $y^2 = 4ax$ and $x^2 = 4ay$. 7 Marks

(OR)

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

b) Evaluate $\iiint_V \frac{dxdydz}{(x+y+z+1)^3}$ taken over the volume bounded by the planes $x = 0$, $y = 0$, $z = 0$ and the plane $x + y + z = 1$. 7 Marks

UNIT-IV

7 a) State convolution theorem and hence evaluate $L^{-1}\left[\frac{s}{(s^2+a^2)^2}\right]$ 7 Marks

b) Find the Laplace transform of (i) $t\,e^{2t}\sin 3t$ (ii) $\cos h(at)\sin(bt)$ 7 Marks

(OR)

8 a) Using Laplace transform, solve $\frac{d^2y}{dt^2}+2\frac{dy}{dt}+5y=e^{-t}\sin t$, given that $y(0)=0, y'(0)=1$. 7 Marks

b) Using Heavisides expansion formula find $L^{-1}\left[\frac{(19s+27)}{((s+1)(s-2)(s+3))}\right]$ 7 Marks

UNIT-V

9 a) If r and R have their usual meanings and A is a constant vector, then prove that $\nabla\times\left(\frac{A\times R}{r^n}\right)=\frac{2-n}{r^n}A+\frac{n(A\cdot R)}{r^{n+2}}R$. 7 Marks

b) Using greens theorem, evaluate $\int_C (x^2ydx-x^2dy)$, where C is the boundary described counterclockwise of the triangle with vertices (0, 0), (1, 0) and (1, 1). 7 Marks

(OR)

10 a) Use Gauss divergence theorem to evaluate $\iint_S \overline{A}\cdot d\overline{S}$ where $A=x^3\bar{i}+y^3\bar{j}+z^3\bar{k}$ and S is the surface of the sphere $x^2+y^2+z^2=a^2$. 7 Marks

b) A vector field is given by $F=(x^2-y^2+x)\bar{i}-(2xy+y)\bar{j}$. Show that the field F is irrotational and find its scalar potential. 7 Marks

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I B.Tech (SVEC14) Supplementary Examinations November - 2015

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) Determine the non-singular matrices P and Q such that PAQ is in the normal form for A and hence obtain the rank of the matrix $A = \begin{bmatrix} 1 & 2 & 3 & -2 \\ 2 & -2 & 1 & 3 \\ 3 & 0 & 4 & 1 \end{bmatrix}$. 7 Marks

b) Solve the following system of equations by Gauss-elimination method: 7 Marks
$2x + 4y + z = 3; \quad 3x + 2y - 2z = -2; \quad x - y + z = 6.$

(OR)

2 a) Verify Cayley-Hamilton theorem for $A = \begin{bmatrix} 2 & 1 & 1 \\ 0 & 1 & 0 \\ 1 & 1 & 2 \end{bmatrix}$. Hence Find A^{-1}. 7 Marks

b) Reduce the quadratic form $6x^2 + 3y^2 + 14z^2 + 4yz + 18zx + 4xy$ into the canonical form. 7 Marks

UNIT-II

3 a) Find a root of the equation $x^3 - 4x - 9 = 0$, using the bisection method correct to three decimal places. 7 Marks

b) The pressure p of wind corresponding to velocity v is given by the following data: 7 Marks

v:	10	20	30	40
p:	1.1	2	4.4	7.9

Estimate p when $y = 15$ and $y = 25$.

(OR)

4 a) Using Newton-Raphson method, find a root of the equation $x \tan x + 1 = 0$ correct to three decimal places which is near to $x = \pi$. 7 Marks

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) 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) Expand f(x) = x as a cosine series in the interval $\mathbf{0 < x < \pi}$ and hence deduce $\mathbf{1/1^2+1/3^2+1/5^2+\text{---------} = \pi^2/8.}$ 7 Marks

b) Using Z-transform, solve the difference equation $\mathbf{u_{k+2} - 2u_{k+1} + 3u_k = 2^k,}$ with $\mathbf{u_0 = 2, u_1 = 1.}$ 7 Marks

(OR)

8 a) Determine the Fourier cosine transform of $\mathbf{1/1+x^2}$. Hence find the Fourier sine transform of $\mathbf{x/1+x^2}$. 7 Marks

b) Evaluate u_2 from $U(z) = \dfrac{4z^2 + 5z + 14}{(z-1)^4}$, by using initial value theorem. 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, $\dfrac{\partial^2 u}{\partial x^2} = \dfrac{\partial u}{\partial y} + 2u$ where u(0, y) = 0 and $\dfrac{\partial u}{\partial x} = 1 + e^{-3y}$ 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 $y = y_0 \sin^3 \dfrac{\pi x}{l}$. If it is released from rest from this position , find the displacement y(x, t) 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech (SVEC14) Supplementary Examinations November - 2015

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)	What is a compiler? How is it different from interpreter, loader and linker?	7 Marks
	b)	Describe the significance of algorithm in program development process. Write an algorithm to find largest number among **n** given numbers	7 Marks
		(OR)	
2	a)	What is a variable? Discuss its scope, initializations.	7 Marks
	b)	How to handle different data types in expression evaluation? Discuss type conversions in 'C'.	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		Write the differences between row major and column major types of arrays. Illustrate with an example how to index an element in both the types of array representations. Comment on statement "Accessing elements in row major type of array is more faster than column major type of array".	14 Marks
		(OR)	
6	a)	Write the difference between call-by-value and call-by-reference. Illustrate with an example how to swap two variables using call-by-reference method.	7 Marks
	b)	Write a 'C' programme to find the length of a string by using recursion.	7 Marks

UNIT-IV

7	a)	Write a program in 'C' to store the roll no. and marks of 5 subjects of in a file. Read the contents of file and display the roll no. and total marks obtained by each student in a class.	7 Marks
	b)	Write a program to describe the usage of pointers in 'C'.	7 Marks
		(OR)	
8	a)	Explain the following with syntax and example : i) Pointer as function argument. ii) Function returning pointer.	7 Marks
	b)	Describe the pointer in 'C' with an example.	7 Marks

UNIT-V

9	a)	Describe the kinds of Binary tree with an example.	7 Marks
	b)	Write a program in 'C' language to implement Circular Queue.	7 Marks

(OR)

10	a)	What are the different ways of implementing a linked list? Compare them with the methods that can be adopted to dynamically and continuously implement a doubly linked list.	7Marks
	b)	What is a circular queue? Write a 'C' function to insert an item in the circular queue.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech (SVEC14) Supplementary Examinations November - 2015

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)	Define algorithm. Explain the characteristics of algorithm.	7 Marks
	b)	Explain about different types of constants in 'C'.	7 Marks
		(OR)	
2	a)	Explain the types of operators in 'C' language.	7 Marks
	b)	Write a 'C' program to print the grades of students in an academic institution using else if ladder.	7 Marks

UNIT-II

3	a)	Write a 'C' program for reads four integers from the keyboard. Calculate their averages and then prints the numbers with their averages.	7 Marks
	b)	Write about Initialization and Updating concepts with examples.	7 Marks
		(OR)	
4	a)	Write a 'C' program to print the Fibonacci series.	7 Marks
	b)	Define switch condition and explain with a 'C' program.	7 Marks

UNIT-III

5	a)	Give an expression to find the physical address of an element in an array.	7 Marks
	b)	Write a program to print lower triangle of a matrix.	7 Marks
		(OR)	
6	a)	Define string. List out string functions in 'C'.	7 Marks
	b)	Write a program to concatenation of two strings.	7 Marks

UNIT-IV

7	a)	What is the difference between Static and Dynamic memory allocations? Explain about memory allocation functions.	7 Marks
	b)	Write a 'C' program for demonstrating how an array of elements can be passed using pointers.	7 Marks
		(OR)	
8	a)	What is the difference between Structure and Union in 'C'? Write a 'C' program for implementing Union.	7 Marks
	b)	Write a 'C' program for implementing bitwise operator.	7 Marks

UNIT-V

9	a)	What are the characteristics of a data structure? Why data structures are used?	7 Marks
	b)	Write a program for stack implementation using pointers.	7 Marks
		(OR)	
10	a)	Write a program to implement queue.	7 Marks
	b)	Write a program to copy the contents of a file into another file.	7 Marks

CODE No.:14BT1HS01 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC14) Supplementary Examinations November - 2015

TECHNICAL ENGLISH

[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	Describe the instances that led to communal harmony among Orthodox Hindu Brahmin families and Muslims at Rameshwaram during the childhood days of Kalam.	14 Marks
	(OR)	
2	Communication refers to the exchange of ideas, information, feelings and emotions. Explain.	14 Marks

UNIT-II

3	How did N.R.Narayana Murthy realize the vision of eradicating poverty in societies? Explain citing examples from his life.	14 Marks
	(OR)	
4	Differentiate between active and passive listening. What are the five steps to active listening?	14 Marks

UNIT-III

5	Write an essay summarizing Amitav Ghosh's 'The Town by the Sea'.	14 Marks
	(OR)	
6	Identify the barriers of spoken communication.	14 Marks

UNIT-IV

7	What are Dr.C.V.Raman's contributions to physics? What were those achievements that brought him awards and titles?	14 Marks
	(OR)	
8	Explain SQ3R reading technique in relation to other reading techniques. Can it be applicable to all types of reading texts? Why or why not?	14 Marks

UNIT-V

9	How would you justify the title of the story “The Model Millionaire”?	14 Marks
	(OR)	
10	What is plagiarism? Explain the techniques to avoid plagiarism.	14 Marks

CODE No.:14BT10301 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC14) Supplementary Examinations November - 2015

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 Reduce the following forces into single force and couple acting at the origin. 14 Marks

F_1 = 200 N passing through (2,3) and (4,5)

F_2 = 400 N passing through (-2,3) and (3,4)

F_3 = 600 N passing through (2,-3) and (4,0)

(OR)

2 The centers of two smooth circular cylinders of weight 200 N each, diameter 150 mm and resting on a smooth horizontal floor are connected by a string of length 180 mm. If another cylinder of 200 mm diameter and weight 400 N is placed on these two cylinders, what would be the tension developed in the string? 14 Marks

UNIT-II

3 Determine the forces in the members of the truss shown in Fig.1. Height of the truss is 4 m. 14 Marks

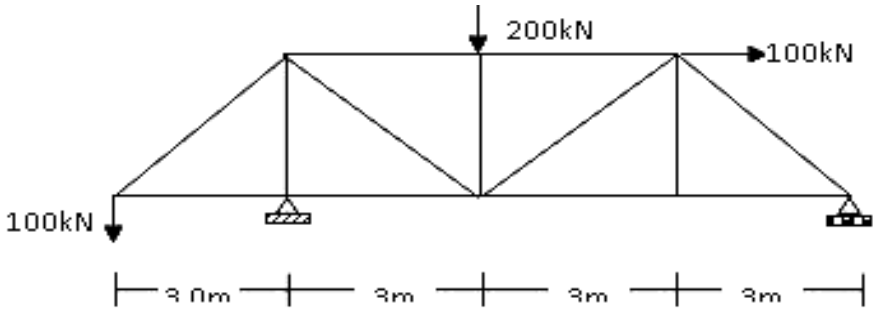

Fig.1

(OR)

4 Determine the forces in the members of the truss shown in Fig.2. Height of the truss is 3 m. 14 Marks

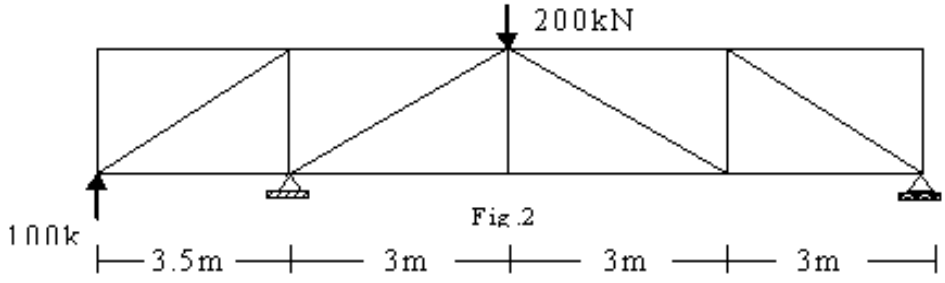

Fig.2

UNIT-III

5 Determine the centroid of the given shaded area shown in the Fig.3. 14 Marks

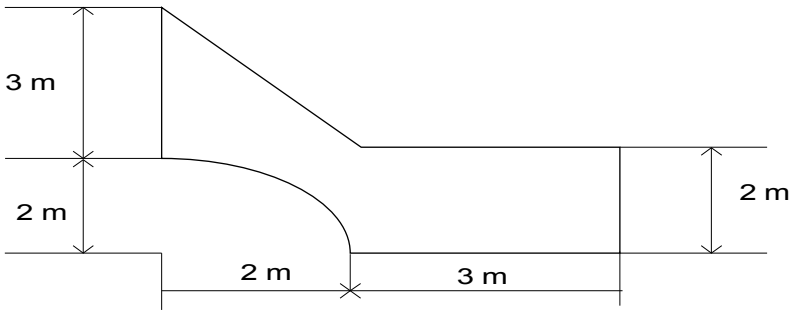

Fig.3.

(OR)

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

b) Find the second moment of area of the lamina shown in the Fig.4 with respect to horizontal and vertical axis passing through the centroid of the section. 8 Marks

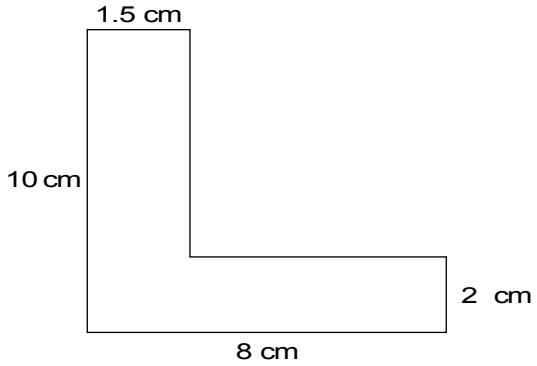

Fig.4.

UNIT-IV

7 The position of a particle moving along a straight line is defined by the relation $\mathbf{x = t^3-9t^2+15t+18}$ where **x** is expressed ***m*** in metre and ***t*** in seconds. Determine the time, position and acceleration of the particle when its velocity becomes zero. 14 Marks

(OR)

8 Two bullets are fired from a defective rifled-gun. First one undershoots the target by 10 m while it was projected at 17^0. Second bullet projected at 44^0 overshoots the target by 25 m. Determine the correct angle of projection for killing the enemy. 14 Marks

UNIT-V

9 A gun of mass 3000 kg fires horizontally a shell of mass 50 kg with a velocity of 300 m/s. What is the velocity with which the gun will recoil? Also determine the uniform force required to stop the gun in 0.6 m. In how much time will it stop? 14 Marks

(OR)

10 A slender rod 5 m long moves with its ends contact with horizontal and vertical floors. For a position, that the base of the bar is 3 m from the vertical wall, the end resting on the horizontal floor moves with a rightward with a speed of 6 mps and a leftward acceleration of 8 m/sec^2. Determine the velocity and acceleration of the other end. 14 Marks

CODE No.:10BT3BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

PROBABILITY AND STATISTICS

[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 conditional probability and establish Bayes theorem.
b) If X is a random variable taking values 0,1,2,…,9 with equal probability, find the probability function and the expected value.

2. a) Define Probability distribution function and write the properties of Distribution function.
b) A sales tax officer has reported that the average sales of the 500 business that he has to deal with during a year are Rs. 36,000 with a standard deviation of 10,000. Assuming that the sales in this business are normally distributed, find
(i) the number of business as the sales of which are Rs. 40,000.
(ii) the percentage of business the sales of which are likely to range between Rs.30,000 and Rs. 40,000.

3. a) Find the co-efficient of correlation between industrial production and export using the following data and comment on the result.

Production(in corer tons)	55	56	58	59	60	60	62
Exports(in corer tons)	35	38	38	39	44	43	45

b) For a set of values of x and y, the two regression lines are 31x - 37y + 5 = 0 and 50x - 36y - 612 = 0. Identify the regression line of y on x and that of x on y. Also obtain the values of $\bar{x}$, $\bar{y}$, and r.

4. a) Define statistic, parameter and standard error with suitable examples. What is sampling with replacement?
b) Distinguish between point estimation and interval estimation. What is 95% confidence interval?

5. a) In 64 randomly selected hours of production, the mean and the standard deviation of the number of acceptance pieces produced by an automatic stamping machine are $\bar{x}$ = 1.038 and s=146. At the 0.05 level of significance does this enable us to reject the null hypothesis μ =1.000 against the alternative hypothesis $\mu > 1.000$?
b) In a certain factory there are 2 independent processes for manufacturing the same item. The average weight in a sample of 250 items produced from one process is found to be 120 gms with a standard deviation of 12 gms while the corresponding figures in a sample of 400 items from the other process are 124 and 14. Is there significant difference between the means?

6. a) Ten soldiers participated in a shooting competition in the first week. After intensive training they participated in the competition in the second week. Their scores before and after training are given as follows:

Scores before	67	24	57	55	63	54	56	68	33	43
Scores after	70	38	58	58	56	67	68	75	42	38

Do the data indicate that the soldiers have benefited by the training.

b) It is desired to determine whether there is less variability in the silver plating done by Company 1 than in that done by Company 2. If independent random samples of size 12 of the two companies' work yield $\mathbf{s_1} = 0.035$ mil and $\mathbf{s_2} = 0.062$ mil, test the null hypothesis $\boldsymbol{\sigma_1^2 = \sigma_2^2}$ against the alternative hypothesis $\boldsymbol{\sigma_1^2 < \sigma_2^2}$ at the 0.05 level of significance.

7. When do you say that a process is in a state of control? How do you construct and operate a control chart for the number of defects (c)?

8. An E-Seva kendra in a small town has only one bill receiving window with a cashier handling the cash transaction and giving receipts. He takes on average 5 minutes per customer. The customers come at random with an average of 8 per hour and the arrivals are Poisson in nature. Determine,

i) average queue length

ii) expected idle time of the cashier

iii) expected time a new arrival spends in the system

iv) expected waiting time of a new arrival before his service is started

v) probability that a person has to spend for at least 10 minutes in the system.

CODE No.:10BT3BS03

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

SPECIAL FUNCTIONS AND COMPLEX ANALYSIS

[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) Form a partial differential equation by eliminating F from F(x+y+z, $x^2+y^2+z^2$) = 0.

b) Find a solution of $y^3 \frac{\partial z}{\partial x} + x^2 \frac{\partial z}{\partial y} = 0$ by method of separation of variables.

2. a) Evaluate $\int_0^2 x \sqrt[3]{8 - x^3}\, dx$ by using Beta-Gamma functions.

b) State and Prove orthogonality of Bessel's Functions.

3. a) Define analytic function. If *f(z)* is an analytic function with constant modulus then show that *f(z)* is constant.

b) Find the analytic function $f(z) = u(r,\theta) + iv(r,\theta)$ such that $v(r,\theta) = r^2 \cos 2\theta - r\cos\theta + 2$.

4. a) State and Prove Cauchy's integral theorem.

b) Evaluate $\oint_C \frac{e^z}{(z^2 + \pi^2)^2} dz$ where C: $|z| = 4$ by Cauchy's integral formula.

5. a) Find the Laurent's expansion of $f(z) = \frac{e^{2z}}{(z-1)^3}$ about the singularity z = 1.

b) Discuss about Isolated singularity and Removable singularity. Also find the type of singularity of the function $f(z) = ze^{\frac{1}{z^2}}$.

6. a) State Residue theorem and use it to evaluate $\int_C \tan z\, dz$, where *C* is the circle $|z| = 2$.

b) Apply the calculus of residues, to prove that $\int_0^\infty \frac{1}{1+x^6} dx = \frac{\pi}{3}$.

7. a) State Rouche's Theorem and use it to determine the number of zeros of the Polynomial $z^7 - 5z^3 + 12$ in $|z| < 1$.

b) Show that every polynomial of degree *n* in a complex plane has *n* zeros.

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.:10BT3BS04

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

MATRICES AND NUMERICAL METHODS

[Civil Engineering, Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1.

a) Find the rank of the matrix $A = \begin{bmatrix} 6 & 1 & 3 & 8 \\ 4 & 2 & 6 & -1 \\ 10 & 3 & 9 & 7 \\ 16 & 4 & 12 & 15 \end{bmatrix}$ by reducing it to the normal form.

b) Determine K such that the system of homogeneous equations has a solution
$2x + y + 2z = 0,\ x + y + 3z = 0,\ 4x + 3y + kz = 0.$

2.

a) Determine whether the Eigen Vectors of the matrix $A = \begin{bmatrix} 1 & 0 & -1 \\ 1 & 2 & 1 \\ 2 & 2 & 3 \end{bmatrix}$ are orthogonal.

b) Using Cayley-Hamilton Theorem, find A^{-1}, where $A = \begin{bmatrix} 8 & -6 & 2 \\ -6 & 7 & -4 \\ 2 & -4 & 3 \end{bmatrix}$.

3. a) Apply Regula Falsi method, find a real root of the equation $\mathbf{x\, e^x = 2}$.

b) By the method of least squares fit an exponential curve of the form $y = a\, e^{bx}$ for the given data:

x	0	2	4
y	5.1	10	31.1

4. a) Using Newton's forward formula, find the value of $\boldsymbol{f(1.6)}$ form the following data.

x:	1	1.4	1.8	2.2
$f(x)$:	3.49	4.82	5.96	6.5

b) Using Lagrange's formula find $\boldsymbol{f(9)}$ from the following data

x:	5	7	11	13	17
$f(x)$:	150	392	1452	2366	5202

5. a) Find $y^{1}(0)$ and $y^{11}(0)$ from the following the data.

x:	0	1	2	3	4	5
y:	4	8	15	7	6	2

b) Use Simpson's 1/3 rule to find $\int_0^6 e^{-x^2} dx$ by taking seven ordinates.

6.

a) Solve, by the modified Euler method, the initial value problem $\frac{dy}{dx} = y + x$, $y(0)=0$, choose $h=0.2$ and compute $y(0.4)$, $y(0.6)$.

b) Use Runge-Kutta method of order four to compute the value of 'y' when 'x=0.2' in steps of 0.2 given that $\frac{dy}{dx} = xy$ and y(0)=1.

7. a) Form the partial differential equation by eliminating the arbitrary functions f and g from z= f(x+ at)+g(x-at)

b) Using the method of separation of variables solve $\frac{\partial u}{\partial x} = 2\frac{\partial u}{\partial t} + u$ where $u(x, 0)=6 e^{-3x}$.

8. a) Define a Fourier series and write the Dirichlet conditions for the expansion of *f(x)* as a Fourier Series in the interval $(\alpha, \alpha + 2\pi)$.

b) Expand the function f(x) = x sin x as a Fourier series in the interval $-\pi \le x \le \pi$.

Deduce that $\frac{1}{1.3} - \frac{1}{3.5} + \frac{1}{5.7} - \frac{1}{7.9} + \ldots\ldots\ldots = \frac{\pi - 2}{4}$.

CODE No.:10BT30102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

BUILDING MATERIALS AND CONCRETE TECHNOLOGY

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the classification of stones and relation to their structural requirements.
b) Explain the manufacturing methods of tiles.

2. a) Explain the process of manufacture of tiles.
b) Explain the classification of limes.

3. a) Explain the process of natural seasoning of timber and state its advantages and disadvantages.
b) Describe the different types of varnishes and explain the process of varnishing on woodwork.

4. a) Explain the use of fiber-reinforced plastics in the construction field.
b) Describe the application of following construction materials:
(i) Galvanised Iron.
(ii) Glass.

5. a) Define workability and explain the influence of various ingredients on workability of concrete.
b) Describe segregation and bleeding.

6. a) Explain Shrinkage, Creep and Thermal effects of concrete.
b) Explain the factors affecting the compressive strength of concrete.

7. a) Discuss what are the different types of polymers used in concrete and what are the various quality control tests done on polymer concrete.
b) What are the factors affecting the choice of mix proportions in Bureau of Indian Standard method?

8. a) Explain the effect of creep in Self Compacting concrete.
b) Explain the different tests on polymer concrete.

CODE No.:10BT30103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

BASICS OF ELECTRICAL AND MECHANICAL TECHNOLOGY

[Civil Engineering]

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

(Minimum of two questions from each part should be chosen for answering five questions)

All questions carry equal marks

PART - A

1. a) How to apply KVL and KCL to alternating current circuits? Explain with an example
b) Two inductors 0.04 H and 0.03 H are connected in series. Determine the equivalent value of inductance of this combination. Derive the equation used from fundamentals.
c) Define the terms: **potential difference**, **mmf**, **emf**.

2. a) Explain the function of three point starter with neat diagram.
b) A series motor having resistance of one ohm between its terminal drives a fan, the torque of which is proportional to the square of the speed. At 230V it speed is 300 r.p.m. and takes 15A current. The speed of the fan is raised to 375 r.p.m. by supply voltage control. Estimate the supply voltage required.

3. a) Explain the principle of working of a transformer.
b) A single phase transformer has N_1 400 turns and N_2 1000 turns, the cross sectional area is $60cm^2$. If the primary is connected to 420V, 50 Hz supply, calculate the secondary voltage and flux density.

4. a) Discuss how torque is produced in 3-phase induction motor. Draw torque -slip characteristics.
b) What is the effect of increase of load on the terminal voltage of alternator? Explain.

PART - B

5. a) Describe the working of Submerged Arc Welding and its suitability.
b) Compare Brazing, Soldering and Gas welding.

6. a) Differentiate petrol and diesel engines through the advantages and disadvantages.
b) What are the fuel supply systems used in petrol engine? Explain any one of them.

7. a) Draw a line diagram of air refrigeration system and explain its working.
b) What is air conditioning? Explain room air conditioning system.

8. a) What are the different types of air compressors? Explain any one of them with a neat sketch.
b) Write brief note on the following:
i) Power showel.
ii) Excavator.
iii) Bucket conveyor.

CODE No.:10BT30104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

SURVEYING

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the various errors and mistakes that arise in chaining?
b) A 20m chain was found to be 10cms too long after chaining a distance of 1500m. It was found to be 18cms too long at the end of days work after chaining a total distance of 2900m. Find the true distance if the chain was correct before the commencement of work.

2. a) Explain the intersection method of plane table survey for determining the distance between two inaccessible points.
b) Following are the bearings taken in a closed traverse.

Line	F.B	B.B
AB	$142^0\ 30'$	$322^0\ 30'$
BC	$223^0\ 15'$	$44^0\ 15'$
CD	$287^0\ 00'$	$107^0\ 45'$
DE	$12^0\ 45'$	$193^0\ 15'$
EA	$60^0\ 00'$	$239^0\ 00'$.

Compute the interior angles and correct them for observational errors.

3. a) Write the uses of contour maps.
b) The following staff readings were observed successively with a dumpy level, the instrument having been moved after third, sixth and eighth readings.
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**.**384 m. Also perform arithmetic check. Use height of instrument method.

4. A railway embankment 400m long is 12m wide at the formation level and has the side slope 2 to 1. The ground levels at every 100m along the centre line are as follows.

Distance, m	0	100	200	300	400
R.L., m	204.8	206.2	207.5	207.2	208.3

The formation level at zero chainage is 207.00m and the embankment has a rising gradient of 1 in 100. The ground is level across the centre line. Calculate the volume of earthwork.

5. a) Explain the temporary adjustments of Vernier transit theodolite with three screw head.
b) Explain the Bowditch's method of balancing the traverse.

6. Following observations were taken from two traverse stations by means of a tachometer fitted with an anallactic lens. The constant of the instrument is 100.

Instrument station	Staff station	Height of instrument, m	Bearing	Vertical angle	Staff readings, m
A	C	1.38	226° 30′	+ 10° 12′	0.765, 1.595, 2.425
B	D	1.42	84° 45′	- 12° 30′	0.820, 1.840, 2.860

Coordinates of station A 212.3 N 186.8 W
Coordinates of station B 102.8 N 96.8 W
Compute the length and gradient of the line CD, if B is 6.50 m higher than A.

7. Explain the procedure to set out simple circular curve by radial offsets and perpendicular offsets from the tangents.

8. Bring out in detail the basic concepts of :
(i) GPS
(ii) GIS

CODE No.:10BT30105

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

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 25 kgf 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. Derive an expression for the pressure at a height Z from sea level for a static air when the compression of air is assumed to be isothermal. The pressure and temperature at sea level are ρ_0 and T_0 respectively.

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 240 kmph in a 80 kmph wind from north-west. What is the apparent wind velocity observed by the pilot? What is apparent wind direction?

4. a) State Bernoulli's equation and enumerate the various forms of energies which the Bernoulli's equation takes into account. What are the limitations of the Bernoulli's equation?
b) The outlet pipe from a pump is a bend of 45 rising in the vertical plane (i.e. and internal angle of 135). The bend is 150mm diameter at its inlet and 300mm diameter at its outlet. The pipe axis at the inlet is horizontal and at the outlet it is 1m higher. By neglecting friction, calculate the force and its direction if the inlet pressure is $100kN/m^2$ and the flow of water through the pipe is $0.3m^3/s$. The volume of the pipe is $0.075m^3$.

5. A straight pipe 30cm diameter, 6 km 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) Similitude and its types.
ii) Different types of non-dimensional numbers and their use.
iii) Hydrodynmically smooth and rough pipes.

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CODE No.:10BT30121

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

FLUID MECHANICS AND HYDRAULIC MACHINERY

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) At a certain point in a fluid the shear stress is 0.216 N/m^2 and the velocity gradient 0.267 s^{-1}. If the mass density of the fluid is 1268 kg/m^3, find the kinematic viscosity of the fluid.

b) A "U"- tube manometer containing mercury of density 13600 kg/m^3 is used to measure the pressure drop along a horizontal pipe. If the fluid in the pipe has a relative density of 0.8 and the manometer reading is 0.6m, what is the pressure difference measured by the manometer?

2. a) 250 litres/sec. of water is flowing in a pipeline having a diameter of 300mm. If the pipe is bent by 135^o, find the magnitude and direction of the resultant force on the bend. The pressure of the water flowing is 400 kN/m^2. Take specific weight of water as 9.81 kN/m^3.

b) What are different types of fluid flow? Explain.

3. a) Obtain the condition for maximum efficiency in transmission of power through a pipe line.

b) A Venturimeter with 150mm diameter at inlet and 100mm at throat is laid with its axis horizontal and is used for measuring the flow of oil of specific gravity 0.9. The oil mercury differential manometer shows a gauge difference of 200mm. Calculate the discharge. Assume the coefficient of meter as 0.98.

4. a) 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%.

b) A jet of water of diameter 7.5cm strikes a curved plate at its centre with a velocity of 20 m/s. The curved plate is moving with a velocity of 8 m/s in the direction of the jet. The jet is deflected through an angle of 165^o. Assuming the plate to be smooth find:

(i) force exerted on the plate in the direction of jet.
(ii) power of the jet.
(iii) efficiency of the jet.

5. a) What are the different types of hydropower plants? Describe each one briefly.

b) Calculate the power developed in MW from a hydro - electric power plant with the following data:
Available head = 50m
Catchment area = 250Sq.Km
Average annual rainfall = 120cm
Rainfall loss due to evaporation = 20%
Turbine efficiency = 82%
Generator efficiency = 84%
Head lost in penstock = 4%

6. a) How are Hydraulic turbines classified?

b) A Kaplan turbine is to be designed to develop 7357.5KW. The net available head is 10m. Assume that the speed ratio is 1.8 and flow ratio is 0.6. If the overall efficiency is 70% and diameter of the boss is 0.4 times the diameter of the runner, find the diameter of the runner, its speed and specific speed.

7. Write brief notes on:

i) Governing of turbines.

ii) Selection of turbine.

8. a) How are pumps classified?

b) A double acting reciprocating pump having piston area $0.1m^2$ has a stroke 0.30m long. The pump is discharging $2.4m^3$ of water per minute at 45 r.p.m through a height of 10m. Find the slip of the pump and the power required to drive the pump.

CODE No.:10BT30201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

ELECTRICAL CIRCUITS

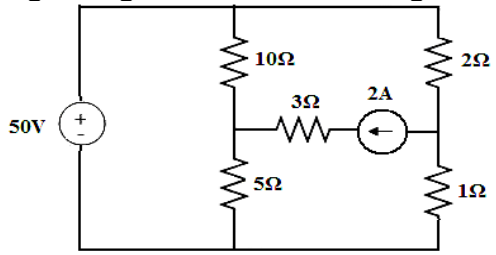
[Electrical and Electronics Engineering]

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

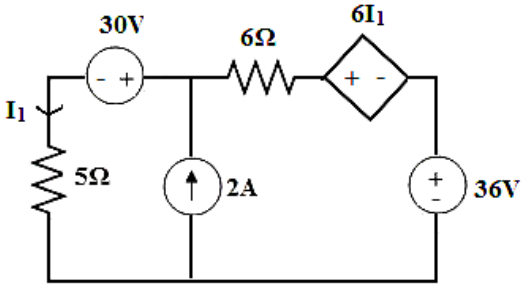
Answer any FIVE questions
All questions carry equal marks

1. a) Explain Passive elements in detail.
b) Three resistances R_{ab} , R_{bc} and R_{ca} are connected in delta connection. Derive the expressions for equivalent star connection.

2. a) Determine the current flowing through the 5Ω resistor using mesh analysis.



b) Determine the current flowing through the 5Ω resistor using nodal analysis.



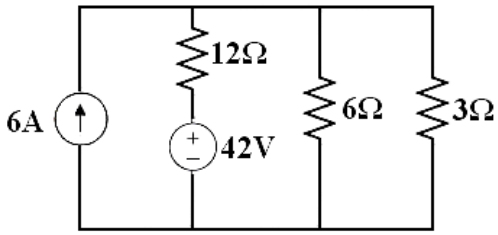
3. a) Define average value, RMS value, form factor and peak factor.
b) Obtain average value, RMS value, form factor and peak factor of a full wave rectified sine wave.

4. a) Show that power dissipated by a pure capacitor exited by a sinusoidal voltage source $V = V_m \text{ Sin } \omega t$ is zero.
b) A circuit consisting of three branches, Z_2 is in parallel with Z_3 the combination is in series with Z_1 having the values $Z_1 = 10+j30$, $Z_2 = 5+j10$ and $Z_3 = 4-j16$ connected across single phase 100 V, 50 Hz supply. Find the current and voltage across the branches Z_1, Z_2, Z_3.

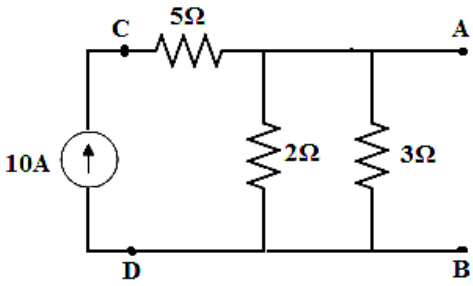
5. a) Show that two wattmeters are enough to measure the power in a three phase system and derive the expression for power factor in terms of two wattmeter readings.
b) Three loads (4+j8)Ω, (3+j4)Ω and (15+j20)Ω are connected in star across a three phase, 4 wire, 400 volts, CBA system. Determine the line currents, current in the neutral wire and the total power.

6. a) Derive the relation between self inductance, mutual inductance and coefficient of coupling
b) A steel ring of mean diameter 26cm and circular section of 3cm in diameter has an air gap of 1.6mm length. If is wound uniformly with 800 turns of wire carrying a current of 3A. Calculate i) MMF, ii) flux density, iii) magnetic flux, iv) relative permeability. Neglect magnetic leakage and assume iron path takes 35% of total MMF.

7. a) State and explain the Superposition theorem.
b) In the circuit shown below, find the current in the 3 ohms resistor using Thevenin's theorem.



8. a) State and explain Tellegen's theorem.
b) Verify the Reciprocity theorem by finding the voltage across the terminals A and B of the network shown below.



CODE No.:10BT30202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

DC MACHINES

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define Field energy and co-energy. What is the significance of co-energy in torque/force derivation in an electromechanical energy conversion device?

b) Two coils have self and mutual inductances of $L_{11}=L_{22}= 2/ (1+2x)$ and $L_{12}= (1-2x)$ .The coil resistances may be neglected. If $i_1=5A$ and $i_2= -2A$, find the mechanical work done when x increases from 0 to 0.5m. What is the direction of the force developed?

2. a) Explain hysteresis and eddy current losses and how they are minimized.

b) The hysteresis and eddy current losses for a given specimen of magnetic material is found to be 2000W at 50Hz. Keeping the flux density constant, the frequency of the supply is raised to 75Hz resulting in a core loss of 3200W. Compute separately hysteresis and eddy current losses at both the frequencies.

3. a) Explain what do you mean by critical field resistance and critical speed with respect to DC generator. Also explain its significance.

b) In a 120V compound generator, the resistance of armature, shunt and series windings are 0.06 Ω, 25 Ω, 0.04 Ω respectively. The load current is 100A at 120V. Find the induced **emf** and armature current when the machine is connected is (i) long shunt (ii) short shunt.

4. a) What is armature reaction? Describe the effects of armature reaction on the operation of DC Machines. How the armature reaction is minimized?

b) Explain clearly the functions of the following in DC machines
(i) Interpoles (ii) Compensating winding

5. a) Explain the working of equalizer bar in parallel operation of DC series generator.

b) Draw and explain the characteristics of separately excited DC generators.

6. a) Explain the back emf in a DC motor. Explain the effect of field current on the speed of DC motor.

b) A 4-pole DC series motor has wave connected winding with 600 conductors. Total resistance of motor is 0.8 ohms. When fed from 250V DC source, the motor supplies a load of 10 kW and takes 50A with a flux per pole of 3mWb. For these operating conditions, calculate the developed torque and the shaft torque.

7. a) Explain with a sketch the working of a 3-point starter used for DC shunt motors.

b) A 220V, 1.5kW, 859 r.p.m, separately excited DC motor has armature resistance of 2.5 ohms it draws a current of 8A at rated load condition. If the field current and the armature voltage are fixed at the value of rated speed at rated load, what will be the no load speed of the motor? Assume losses remain constant between no load and full load operation.

8. a) Explain how Field's test is conducted on two series machines. How efficiency is found out from the results of Field's test?

b) Two identical dc machines when tested by Hopkinson's method gave the following test results. Field currents are 2.5A and 2A. Line voltage is 220V. Line current including both field currents is 10A. Motor armature current is 73A. The armature resistance of each machine is 0.05 ohms. Calculate the efficiency of both machines.

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CODE No.:10BT30221

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

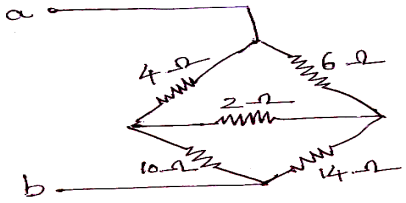
BASIC ELECTRICAL ENGINEERING

[Computer Science and Engineering,Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) State and explain Kirchoff's laws.
b) Find the resistance between a, b of the bridge circuit.

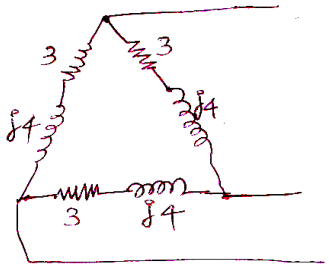


2. a) What is the difference between 'circuit' and 'network'?
b) Explain Thevenin's theorem and give its applications.

3. a) Define:
i) Instantaneous value. (ii) Peak Value. (iii) Average value.
iv) RMS value. (v) Form factor.

b) A circuit takes a current of $I = 20\sin\left(314t - \frac{\pi}{6}\right)$ amperes when the voltage is $V = 100\sin 314t$. Calculate the impedance, phase angle, resistance and inductance of the circuit.

4. a) What do you mean by three phase balanced and unbalanced loads?
b) In the circuit shown below obtain line and phase voltages and currents.



5. a) Derive EMF Equation of DC Generator.
b) Write about different types of DC motors.

6. a) Explain the principle and operation of an induction motor.
b) Define regulation of transformer.

7. Explain the principle and operation of the following :
i) AC servo motor ii) Stepper motors.

8. a) What are the essential features of measuring instruments?
b) Explain the principle of operation of Moving Iron instruments.

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CODE No.:10BT30222

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

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) Explain kirchoff's laws with one example each.
b) Derive the equations for equivalent resistances for star/delta and delta/star transformations.

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) Explain how the AC Voltage is generated.
b) A current of 5A flows through a non inductive resistance connected in series with a choking coil when a voltage of 230V, 50HZ is applied across it. If the voltage across the resistance is 115V and the across the choking coil is 184V. Calculate the Resistance, Admittance and Impedance of the coil.

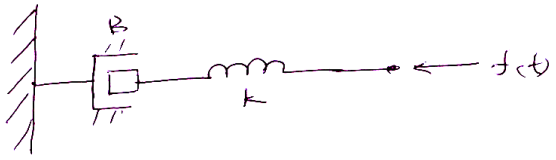
4. a) Derive the **emf** equation of DC generator.
b) A 250 V DC shunt motor takes 41 amps at full load. Find the back **emf** on full load if the resistances of motor armature and shunt field windings are 0.1 ohms and 250 ohms respectively.

5. a) Explain the principle of operation of 3-phase induction motor.
b) A 3-phase, 4-pole, 50 Hz induction motor is running at 1455 r.p.m.
Find the slip speed and slip.

6. With neat sketch, explain about PMMC instrument.

7. a) Mention the classification of control systems. Distinguish between time invariant and time variant systems.
b) Discuss the effect of negative and positive feedback on output of a control system.

8. a) Define transfer function. Derive the transfer function of the following system by writing the fundamental equations relating input and output:



b) What is the advantage of Signal Flow Graphs over Block Diagram representation? State and explain Mason's gain formula.

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CODE No.:10BT30223

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

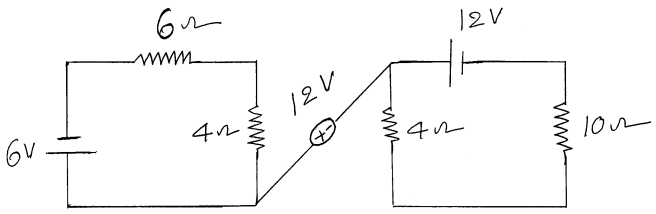
CIRCUIT THEORY

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

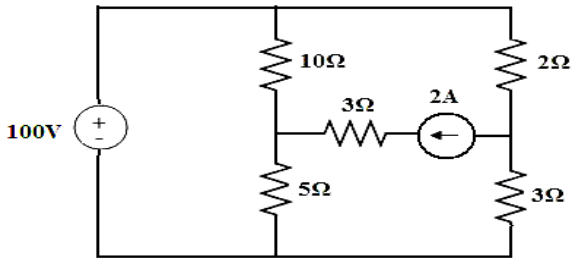
Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

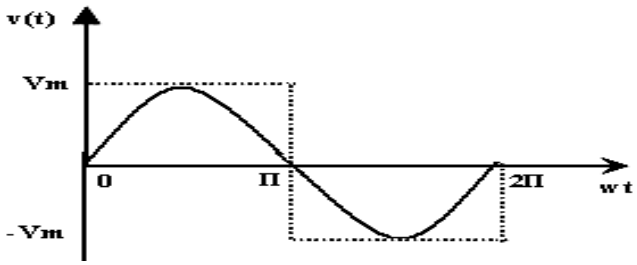
1. a) State and explain Kirchhoff's laws.
b) What is the voltage across A and B in the circuit shown below?



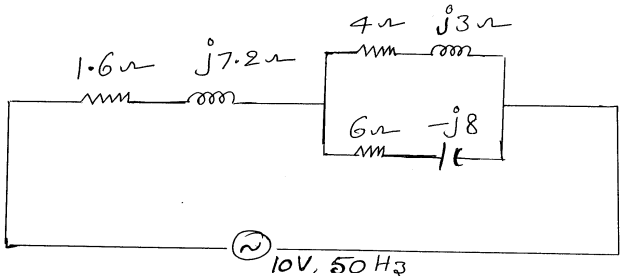
2. Determine the current flowing through the 5Ω resistor using mesh analysis.



3. a) Define: Peak value, instantaneous value, average value and RMS value.
b) Find the ratio of R.M.S. values of the two voltage wave forms of equal peak value, one sinusoidal and the other rectangular in shape as shown below.



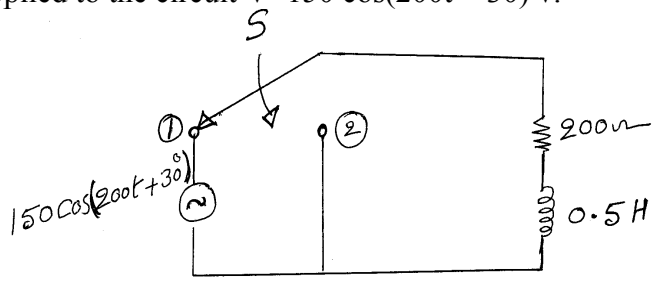
4. a) Derive the expression for power in a single phase A.C circuits.
b) Find the following for a series parallel circuit shown below.



i) Total impedance
ii) Current drawn from supply
iii) Power factor
iv) Apparent, active and reactive powers

5. a) Show that in RLC circuit, the resonant frequency is geometric mean of lower and upper half power frequencies ω_1 and ω_2

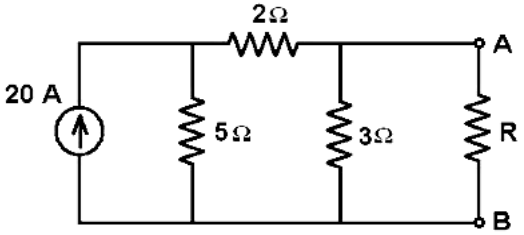
b) For the circuit shown below determine the transient current when the switch is moved from position 1 to position 2 at t=0.The circuit is in steady state with a switch in position 1.The voltage applied to the circuit V=150 cos(200t + 30) v.



6. a) Explain Dot convention?

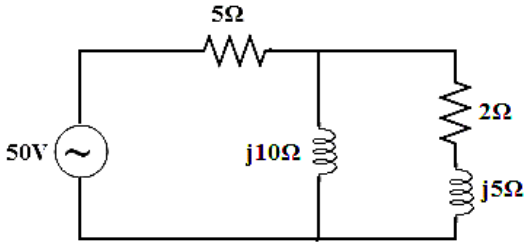
b) A torroid is made of steel rod of 2cm diameter. The mean radius of torroid is 20cm relative permeability of steel is 2000. Compute the current required to produce 1 m wb of flux and 1000 turns in the torroid.

7. The circuit shown in figure below has resistance R which absorbs maximum power. Compute the value of R and maximum power by using maximum power transfer theorem.



8. a) State and explain the Millman's theorem.

b) In the circuit shown below, the 2Ω resistor is changed to 4Ω. Determine the change in current in that branch using Compensation theorem.



CODE No.:10BT30301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

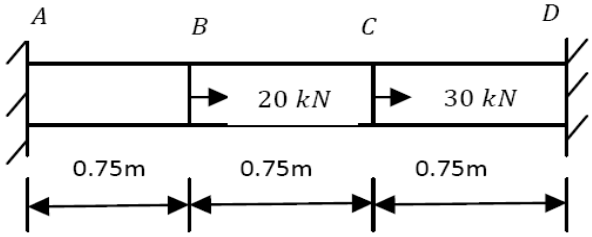
STRENGTH OF MATERIALS

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define bulk modulus and deduce the equation $E = 3K(1-2v)$.
b) A bar AD as shown in figure is made of steel is placed between two rigid supports A and D. The bar is loaded at B and C. Find the stresses in the portion AB, BC and CD. The area of the bar is 4900 mm^2 and young's modulus of steel is 2.1 **x** $10^5 N/mm^2$.



2. A horizontal beam of 10m long is carrying a uniformly distributed load of 1 kN/m over the entire length. The beam is simply supported on two supports 6m apart. Find the position of the supports, so that the BM on the beam is as small as possible. Also draw the SF and BM diagrams.

3. A beam is simply supported and carries a uniformly distributed load of 40 kN/m run over the whole span. The section of the beam is rectangular having depth as 500mm. If the maximum stress in the material of the beam is 120 N/mm^2 and moment of inertia of the section is 7 **×** 10^8 mm^4, find the span of the beam.

4. Determine the shear stress generated in a rectangular section of a beam which is subjected to a shear force F.

5. a) Prove that a hollow shaft is always stronger than solid shaft of the same material, weight and length, when subjected to simple torque.
b) Derive Torsion equation for shaft having circular cross section.

6. A simply supported beam has a span of 15m and carries two point loads of 4 kN and 9 kN at 6m and 10m respectively from one end. Find the deflection under each load and maximum deflection. $E = 200\ GPa$ and $I = 400$ **x** 10^6 mm^4.

7. Show that when a thin walled spherical vessel of diameter 'd' and thickness 't' is subjected to an internal pressure 'p', the increase in volume is equal to $\frac{\pi p d^4}{8tE}(1-v)$.

8. A compound cylinder is composed of a tube of 250mm internal diameter at 25mm wall thickness. It is shrunk on to a tube of 200mm internal diameter. The radial pressure at the junction is 8 N/mm^2. Find the variation of hoop stress across the wall of the compound cylinder, if it is under an internal fluid pressure of 60 N/mm^2.

CODE No.:10BT30302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

MATERIALS SCIENCE AND METALLURGY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Classify engineering materials.
b) Distinguish edge and screw dislocations.

2. a) What are Interstestial solid solution rules?
b) What is difference between an ordinary alloy and electron compound?

3. a) What do you mean by equilibrium diagram? Discuss the experimental method for its construction.
b) Draw a schematic of binary phase diagram of Fe-Fe_3C and label their important phases.

4. a) How are tool steels produced?
b) Explain the structure of spherodial graphite steel.

5. a) Explain tempering process.
b) Explain cryogenic treatment of alloys in detail.

6. a) Explain, why titanium alloys are used in turbines.
b) List any four applications of aluminum alloys.

7. What is the difference between crystalline and non-crystalline ceramics? Explain with an example.

8. Explain the procedure of powder mixing and blending in powder metallurgy.

CODE No.:10BT30303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

THERMODYNAMICS

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the classification of properties in thermodynamics. Differentiate between point and path functions.
b) Discuss about Quasi static Process.

2. a) Derive Steady Flow Energy Equation for a Control Volume involving one inlet flows and one outlet flows. Explain how it can be applied for a Steady-Flow Compressor which is not insulated.
b) Explain the working principle of constant volume gas thermometer with a neat sketch.

3. a) Explain in detail about the Carnot's cycle.
b) A refrigeration plant for a food store operates as a reversed Carnot heat engine cycle. The store is to be maintained at a temperature of - 7 ^{0}C and the heat transfer from the store to the cycle is at the rate of 5.4 kW. If the heat is transferred from the cycle to the atmosphere at a temperature of 25 ^{0}C, calculate the power required to drive the plant.

4. a) State and prove Clausius Inequality.
b) Obtain Principle of Increase of Entropy. What is its significance?

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 3 MPa is put through a throttling calorimeter in which the pressure and temperature are found to be as 0.1 MPa and 120 ^{0}C. Find the quality of the sample taken from the boiler.

6. a) Explain the utility of a Compressibility Chart.
b) How is real gas behavior is different from Ideal gas behavior?

7. Derive expressions for following Mixture properties in terms of their individual component properties.
Entropy, Enthalpy, Internal energy and Specific heats.

8. a) Write short notes on: (i) Evaporative cooling and (ii) Chemical dehumidification.
b) An air conditioning unit is designed under the following conditions:
Outdoor conditions: 28 ^{0}C DBT and 70 % RH,
Required indoor conditions: 20 ^{0}C DBT and 72 % RH,
amount of free air circulated 3 m^3/sec and coil dew point temperature 15 ^{0}C.
The required condition is achieved first by cooling and dehumidification and then by heating.
Estimate (i) the capacity of the cooling coil in tones, (ii) The capacity of the heating coil in KW
(iii) the amount of water vapour removed in kg/sec.

CODE No.:10BT30401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

SEMICONDUCTOR DEVICES AND CIRCUITS

[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) Explain the formation of depletion region in an open circuited p-n junction with neat sketches.
b) Explain the process of breakdown of a p-n junction diode due to Avalanche effect and Zener effect.

2. a) Define the following terms as referred to FWR circuit.
(i) PIV. (ii) Average DC voltage. (iii) RMS Current. (iv) Ripple factor.
b) A FWR supplies a load requiring 300V at 200mA. Calculate the transformer secondary voltage for (i) A capacitor input filter using a capacitor of 10mA. (ii) A choke input filter using a choke of 10H and a capacitance of 10mF. Neglect the choke resistance.

3. a) Explain input characteristics of transistor CB configuration.
b) A transistor with $\alpha = 0.97$ has a reverse saturation current of 1 μA in CB configuration. Calculate the value of leakage current in the CE configuration. Also find the collector current and the emitter current if the value of base current is 20 μA.

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 : $\alpha = 0.985$, $I_{CBO} = 4$ μA and $V_{BE} = 0.2$ volts.

5. a) What are the advantages of h-parameter?
b) A CE amplifier has $R_c = 10K\ \Omega$, $R_e = 2k\ \Omega$, $h_{ie} = 2\ \Omega$, $h_{fe} = 60$ μmhos, $h_{re} = 1 \times 10^{-4}$.
Calculate A_i and A_v.

6. a) With a neat sketch, explain the characteristics of MOSFET in depletion mode.
b) Draw the small signal model of JFET in all configurations.

7. a) Compare BJT, FET and JFET in all aspects.
b) A JFET circuit with voltage divider has $V_{dd} = 15V$, $R_1 = 12k\ \Omega$, $R_2 = 4K\ \Omega$, $R_L = 500\ \Omega$, $R_s = 1K\ \Omega$. Calculate V_g, V_s, V_d and V_{ds} if $V_{gs} = -2V$.

8. Write short notes on:
i) varactor diode. ii) schottky barrier diode.

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CODE No.:10BT30402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

PROBABILITY THEORY AND STOCHASTIC PROCESS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) State and prove Total probability.

b) In an experiment of picking up a resistor with same likelihood of being picked up for the events; A as "draw a 47 resistor", B as "draw a resistor with 5% tolerance" and C as "draw a 100 resistor" from a box containing 100 resistors having resistance and tolerance as shown below. Determine joint probabilities and conditional probabilities.

Table 1 : Number of resistor in a box having given resistance and tolerance.

Resistance(Ω)	Tolerance		
	5%	10%	Total
22	10	14	24
47	28	16	44
100	24	8	32
Total	62	38	100

2. a) A random current is described by the sample space $S = \{-4 \le i \le 12\}$. A random variable X is defined by

$$X(i) = \begin{cases} -2 & i \le -2 \\ i & -2 < i \le 1 \\ 1 & 1 < i \le 4 \\ 6 & 4 < i \end{cases}$$

Show, by a sketch, the value x into which the values of I are mapped by x. What type of random variable is X?

b) Explain Gaussian random variable with neat sketches.

3. a) When two dice are thrown, find the expected value of the sum of number of points on them.

b) If the random variable X has a mean of 8, a variance of 9 and an unknown probability distribution. Find (i) p(-4 < X < 20) (ii) p(|X-8| ≤ 6).

c) If the random variable X has uniform distribution, find its variance.

4. a) Define Marginal density function? Find the Marginal density functions of below joint density function.

$$f_{xy} = \frac{1}{2}u(x)u(y)e^{-x/3}e^{-y/4}$$

b) Find the density function of W = X+Y, where the densities of X and Y are assumed to be: $\mathbf{f_x(x)=4u(x)e^{-4x}}$; $\mathbf{f_y(y)=5u(y)e^{-5y}}$.

5. a) Define random variables V and W by

$V = X+aY$

$W = X-aY$

Where a is real number and X and Y random variables, determine a in terms of X and Y such V and W are orthogonal.

b) Gaussian random variables X and Y have first and second order moments $m_{10} = -1.1$, $m_{20} = 1.16$, $m_{01} = 1.5$, $m_{02} = 2.89$, $R_{XY} = -1.724$ find C_{XY}, ρ?

6. a) Explain about stationary random process.

b) Define a random process by $X(t) = A\cos(\pi t)$

Where A is Gaussian random variable with zero mean and variance σ_A^2

i) find the density function of X(0).

ii) Is X(t) stationary in any sense?

7. a) A random process has the power density spectrum $\mathbf{p_{xx}(\omega) = (6\ \omega^2)/(1+\omega^4).}$ Find the average power of the process.

b) A random process $\mathbf{X(t) = A\ \sin(\omega_o t+\theta)}$ where **A** and ω_o are real positive constants and **θ** is a random variable uniformly distributed in the interval **(-π, π)**, is applied to the series LR network and the output is across the resistor. Find the expression for the network's response.

8. A random process is given by $X(t) = A\cos(\Omega t + \theta)$ where A is a real constant, Ω is a random variable with density function $f_\Omega(\Omega)$ and θ is a random variable uniformly distributed over the interval $(0,2\pi)$ independent of Ω. Show that the power spectrum of $X(t)$ is $S_{xx}(\omega) = \frac{\pi A^2}{2}[f_\Omega(\omega) + f_\Omega(-\omega)]$ and also find P_{YY}.

CODE No.:10BT30403

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

SIGNALS AND SYSTEMS

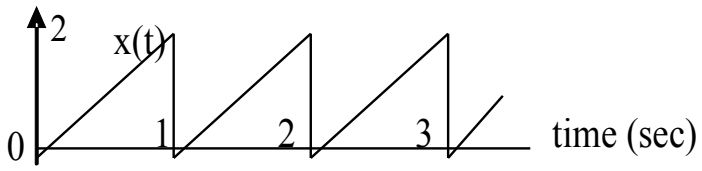
[Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Write short notes on Orthogonal functions.
b) Define the following elementary signals
(i). Real exponential signal. (ii). Continuous time version of a sinusoidal signal.
And bring out the relation between sinusoidal and complex exponential signals.

2. a) Find the Trigonometric Fourier series



b) What is the relation between trigonometric and exponential Fourier series.

3. State and prove following properties of Fourier transform
i) Scaling property ii) Duality Property iii) Differentiation Property

4. a) Explain how input and output signals are related to impulse response of LTI system.
b) Let the system function of a LTI system is $H(j\omega) = \frac{1}{j\omega + 2}$. What is the output of the system for an input $e^{-t}u(t)$?

5. a) List out all properties of convolution and correlation
b) Distinguish energy spectral density and power spectral density.

6. a) Write about different sampling techniques.
b) Explain reconstruction of a signal from its samples.

7. a) Define sampling theorem for time limited signal and find the Nyquist rate for the following signals.
i) **sinc20t** ii) **4 sinc2100t**.
b) Discuss effect of under sampling.

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

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

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 about PN junction diode with neat diagrams and V-I characteristics of PN junction diode.
b) Derive current components of diode.

2. a) Draw the circuit diagram of full wave rectifier and explain the operation with waveforms.
b) Derive an expression for ripple factor of a full wave rectifier with L - filter.

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 the importance of Biasing a BJT.
b) Draw the BJT Fixed bias circuit and derive the expression for Stability factor 'S'.

5. Derive expression for voltage gain, current gain, input impendence and output impendence of CE amplifier using hybrid model.

6. a) Explain the Drain and Transfer characteristics of a JFET.
b) Compare BJT and JFET.

7. a) What are the merits of negative feedback used in amplifiers?
b) Draw the circuit of Heartley oscillator and explain its operation.

8. a) Explain Tunnel diode characteristics with the help of energy band diagram.
b) Draw the equivalent circuit of UJT and explain the characteristics.

CODE No.:10BT30422

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

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) Discuss in brief about the basic theorems and properties of Boolean algebra.
b) Find the dual of the following functions.
i) (XY + Z) (Y + XZ)
ii) (A' + B) (B' + C)

3. a) Simplify the following Boolean function using K-Map.
$f(w,x,y,z) = \sum m(1,2,3,5,9,12,14,15) + \sum d(4,8,11)$
b) Implement the following function using gates.
$f(A, B, C) = \sum (0, 1, 3, 7) + \sum d(2, 5)$.

4. a) Explain the Magnitude comparator with logic diagrams.
b) Explain the Binary subtractor with Truth table.

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. Design a 4-bit register with parallel load using D flip-flops.

7. a) Draw and explain the block diagram of PLA.
b) Explain in detail about RAM.

8. a) Draw the schematic circuit of a negative edge trigger SR flip flop with 'active low preset' and 'active low clear' inputs using NAND gates and explain the operation with the help of truth table.
b) Explain Memory decoding.

CODE No.:10BT30501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

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) What is a universally valid formula? Show that the proposition (PΛ(Q→ P)) → Q is universally valid formula.
b) Obtain the principal corrective normal form of (¬P V ¬Q) → (P ↔ ¬Q).

2. a) Show that R→ S can be derived from the premises P → (Q→ S), ⌉R∨ P, and Q.
b) Show that ⌉ $P(a,b)$ follows logically from (x) (y) (P(x, y) → $W(x,y)$) and ⌉ $W(a,b)$.

3. a) Draw the Hasse diagram of the set {1,2,3,6,12}under the partial ordering relation "divides" and indicate those which are totally ordered.
b) Show that the function $f\langle x,y\rangle = x+y$ is primitive recursive.

4. a) Show that the intersection of any two congruence relations on a set is also a congruence relation.
b) Let **S** be a non-empty set and **o** be an operation on **S** defined by aob = a for a,b ∈ S. Determine whether o is commutative and associative in S.

5. a) Prove that $1^2 + 2^2 + \ldots + n^2 = n(n+1)(2n+1)/6$ where n is a positive integer
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) Solve the recurrence relation $\mathbf{a_n + a_{n-1} - 8a_{n-2} - 12a_{n-3} = 0}$, $\mathbf{n \geq 3}$ with $\mathbf{a_0 = 1}$, $\mathbf{a_1 = 5}$, $\mathbf{a_2 = 1}$.
b) Solve the relation $\mathbf{a_n = a_{n-1} + n^2}$, $\mathbf{n \geq 1}$, $\mathbf{a_0 = 1}$ 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) Write briefly about the following :
i) Depth-First search tree ii) Chromatic number of a bipartite graph $\mathbf{k_{3,3}}$
b) Describe Prim's algorithm with suitable example for finding the minimum spanning tree.

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CODE No.:10BT30502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

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

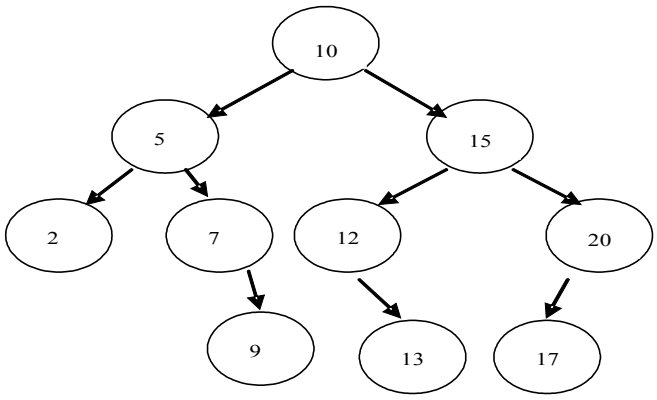
1. Write a C program for implementing Heap sort algorithm to arrange elements in the ascending order. And also demonstrate the working of Heap Sort algorithm for the list of integers: 5, 1, 23, 5, 21, 28, 44, 6, 26, and 36.

2. Briefly describe about each of the following with a suitable illustration.
(i) Singly linked list (ii) Doubly linked list (iii) Circularly linked list (iv) Multi linked list

3. Give an algorithm to convert a decimal number to binary number which uses a stack. Show working of your algorithm in order to convert the decimal number 513 into its equivalent binary form.

4. *Inorder* traversal of a binary tree is *ABCDEFGH*. Its *postorder* traversal is *HGFEDCBA*. Find the binary tree and give its other traversal.

5. a) Give the binary tree that results when the following letters are inserted into a binary search tree: **ILOVECPROGRAMS**
b) Given a Binary Tree show the result of deleting 2, 5, 20, 10 after every delete the resultant tree will be the input for next delete.



6. Discuss about various cases, with simple illustrations, that arises when deleting a key from a B Tree of order *m.*

7. Give the algorithm for each of the following
i) Minimum spanning tree
ii) Shortest path

8. Let T be a tree with n nodes. Define the lowest Common Ancestor (LCA) between two nodes v and w as the lowest nodes in T that has both v and w as descendents (where we allow a node to be a descendent of itself). Given two nodes v and w, describe an efficient algorithm for finding the LCA of v and w. What is running time of your method?

CODE No.:10BT31001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

THERMODYNAMICS AND FLUID MECHANICS

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is Zeroth Law of Thermodynamics?
b) An open system is defined for a fixed region and closed system for a synonymous. Explain.

2. a) Describe the behaviour of gases under the variable conditions of its pressure and temperature.
b) Differentiate between single stage and multi stage compressors.

3. a) Describe the working principle of a modified Rankine cycle with a neat sketch.
b) Give a classification of boilers.

4. a) Explain the working principle of vapor compression refrigeration system.
b) Explain the Fourier law of conduction in one dimensional heat transfer.
c) What are gray body and black body with reference to radiation?

5. a) State the Newton's law of viscosity. And briefly discuss different types of fluids
b) An inverted u-tube manometer is connected two horizontal pipes through which water is flowing. The vertical distance between the axis of these pipe lines are 30cm. When oil of specific gravity 0.8 is used as a gauge fluid, the vertical heights of water columns in the two limbs of the inverted manometer are found to be same and equal to 35cm. Find the deference in pressure between the pipes.

6. a) A liquid with specific gravity 0.8, flows at the rate of 3 lit/s through a venturimeter of diameters 6cm and 4cm. If the manometer fluid is mercury (specific gravity = 13.6), determine the value of manometer reading **h**.
b) State Euler's equation and hence deduce Bernoulli's Equation.

7. a) What are the uses of dimension less numbers? Explain the significance of Reynolds number and Weber number in fluid flow analysis.
b) What is meant by geometric, kinematic and dynamic similarities? Are these similarities truly attainable? If not why?

8. a) Describe the importance of air-vessel in a reciprocating pump.
b) Explain about the main characteristic curves of hydraulic turbines.

CODE No.:10BT40404

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

SWITCHING THEORY AND LOGIC DESIGN

[Electrical and Electronics 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) Convert the following:
i) $(F3A7C2)_{16}$ to Binary and Octal. ii) $(4310)_5$ to Decimal
iii) $(1938.257)_{10}$ to Hexadecimal.
b) Perform the following operations without converting to decimal and using r's complement representation.
i) $(7568)_8 - (8567)_8$ ii) $(11110110)_2 - (01111110)_2$

2. a) Explain the duality property in Boolean algebra. What is dual of Boolean function $(x + x'y) + (1.x)$?
b) Draw and compare the truth tables of 3 variables EX-OR and EX-NOR gates.
c) What are the advantages and disadvantages of canonical and standard forms ?
d) Given F(A, B, C, D) = D(A' + B) + B'D. Express 'F' in sum of minterm and product of maxterm forms.

3. a) Simplify the Boolean function 'F' using don't care conditions 'd' in (i) SOP form (ii) POS form.
F = A'B'D' + A'CD + A'BC, d = A'BC'D + ACD + AB'D'
b) Given F(A,B,C,D,E) = $\sum$ (0,2,4,6,9,11,13,15,17,21,25,27,29,31). Obtain the simplified SOP form using k-map method.

4. a) What are the hazards in an digital system and explain in detail about static, dynamic and essential hazards
b) Implement the following functions using a multiplexer
Y = C'B'A' + C'BA' + C'BA + CB'A + CBA.

5. a) Compare PROM, PLA and PAL.
b) Realize the functions given using a PAL.
w(A,B,C,D) = Σm (1,2,5,7,8,10,12,13) and x(A,B,C,D) = Σm (0,2,6,8,9,14)

6. a) Draw the circuit of an Master-Slave JK Flip-Flop and explain its operation and also explain how race around condition is eliminated in this flip-Flop.
b) Draw and explain the operation of an 4-bit bidirectional shift register and also list out the applications of an shift register.

7. a) Explain the capabilities and limitations of Finite state machines.
b) Explain about **mealy** and **moore** models.

8. a) Explain salient features of ASM chart.
b) Draw the ASM chart for the following state transition, start from the initial state T_1 then if xy = 00 go to T_2, if xy = 01 go to T_3, if xy = 10 go to T_1 otherwise go to T_3.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations May - 2016

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) Determine the value of 'b' such that the system of homogeneous equations $2x + y + 2z = 0$, $x + y + 3z = 0$, $4x + 3y + bz = 0$ has i) trivial solution ii) non-trivial solution. Find the non-trivial solution. 7 Marks

b) Prove that "For a real symmetric matrix, the eigen vectors corresponding to two distinct eigen values are orthogonal". 7 Marks

(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) State Cayley - Hamilton theorem and using it find A^4 if $A = \begin{bmatrix} 1 & 0 & 3 \\ 2 & 1 & -1 \\ 1 & -1 & -1 \end{bmatrix}$ 7 Marks

UNIT-II

3 a) Find the root of the equation $x \sin x + \cos x = 0$ using Newton-Raphson method. 7 Marks

b) A simply supported beam carries a concentrated load P (lb) at its mid-point, corresponding to various values of P, the maximum deflection Y (in) is measured, The data are given below: 7 Marks

P	100	120	140	160	180	200
Y	0.45	0.55	0.60	0.70	0.80	0.85

Find a law of the form Y= a+bP by the method of least squares.

(OR)

4 a) By using bisection method, find an approximate root of the equation $\sin x = 1/x$, that lie between x = 1 and x = 1.5(measured in radians), carry out computations up to 5 stages. 7 Marks

b) A curve passes through the points (1, -3), (3, 9), (4, 30) and (6, 132). Find the slope of the curve at x = 2. 7 Marks

UNIT-III

5 a) Evaluate $\int_0^n \theta^2 \sqrt{\cos\theta}\, d\theta$ using Simpson's 1/3 rule by dividing the range into six equal parts. 7 Marks

b) Given that $\frac{dy}{dx} = y - x$, $y(0) = 2$. Find y (0.2) using Runge-Kutta method of order 4 taking h = 0.1 7 Marks

(OR)

6 a) Using modified Euler method, find an approximate value y when $x = 0.2$, given that $dy/dx = x + y$ and $y = 1$ when $x = 0$. Taking step size $h = 0.1$. 7 Marks

b) The velocity v(km/min) of a scooter which starts from rest is given at fixed intervals of time t (min) as follows: 7 Marks

t:	2	4	6	8	10	12	14	16	18	20
v:	10	18	25	29	32	20	11	5	2	0

Estimate approximately the distance covered in 20 minutes.

UNIT-IV

7 a) Expand $f(x) = 3x^2 - 2$ as a Fourier series in the interval $(-3, 3)$. 7 Marks

b) Find the Fourier cosine transform of $f(x) = \dfrac{1}{x^2 + 1}$ 7 Marks

(OR)

8 a) Find the Fourier series of the function $f(x) = -1 + x$ for $-\pi < x < 0$ 7 Marks

$= 1 + x$ for $0 < x < \pi$

Hence prove that $1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \ldots\ldots = \frac{\pi}{4}$.

b) Using Fourier integral representation, show that $\int_0^\infty \frac{\sin x \cos \lambda x dx}{x} = \frac{\pi}{2}, 0 \leq \lambda < 1$. 7 Marks

UNIT-V

9 a) Form the partial differential equation by eliminating arbitrary constants from 7 Marks

$2z = \dfrac{x^2}{a^2} + \dfrac{y^2}{b^2}$.

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 $k \sin^3 \pi x / l$. 7 Marks
Find the displacement $y(x, t)$ at any point 'x' and at any time 't'.

(OR)

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

b) A homogeneous rod of conducting material of length 100cm has its ends kept at zero temperature and the temperature initially is $u(x) = x$; $0 \leq x \leq 50$ 7 Marks

$= 100 - x$; $50 \leq x \leq 100$.

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

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations May - 2016

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) Show that $\int_0^{\infty} \frac{x^{m-1} + x^{n-1}}{(1+x)^{m+n}} dx = 2\beta(m,n)$. 7 Marks

b) Prove that $J_n'(x) = \frac{1}{2}[J_{n-1}(x) - J_{n+1}(x)$. 7 Marks

(OR)

2 a) Show that $\beta(m,n) = 2\int_0^{\frac{\pi}{2}} Sin^{2m-1}\theta \, Cos^{2n-1}\theta \, d\theta$ and deduce 7 Marks

$$\int_0^{\pi/2} Cos^n\theta \, d\theta = \frac{\Gamma(n+1/2.\Gamma(\pi)}{2\Gamma(n+2/2)}.$$

b) Prove that $2J_0''(x) = J_2(x) - J_0(x)$. 7 Marks

UNIT-II

3 a) Show that the function f(z) = $\sqrt{|xy|}$ is not regular at the origin although Cauchy's – Riemann equations are satisfied. 7 Marks

b) If f(z) is an analytics function of z, prove that $\left(\frac{\partial^2}{\partial x^2} + \frac{\partial^2}{\partial y^2}\right) \log |f'(z)| = 0$. 7 Marks

(OR)

4 a) If f(z) = u+iv is an analytic function, find f(z) if u-v = e^x(cosy – sin y). 7 Marks

b) Determine the analytic function w = u + iv if v = log (x^2+y^2) + x-2y. 7 Marks

UNIT-III

5 a) Evaluate $\int_0^{1+i} (x - y + ix^2)\,dz$ along the real axis from z =0 to z = 1 and then along a line parallel to imaginary axis from z = 1 to z = 1 + i. 7 Marks

b) Use Cauchy's and integral formula to evaluate $\oint_c \frac{e^{2z}}{(z+1)^4}$ dz where c is the circle |z| = 2. 7 Marks

(OR)

6 a) Evaluate $\oint_c \frac{3z^2 + 7z + 1}{(z+1)}$ dz where c is the circle |Z+i|=1. 7 Marks

b) Expand $f(z) = \frac{(z-2)(z+2)}{(z+1)(z+4)}$ is the region (i) $|z| < 1$, (ii) $|z| > 4$, (iii) $1<|z|<4$. 7 Marks

UNIT-IV

7 a) Determine the poles of the function and the corresponding residues $\frac{z+1}{z^2(z-2)}$. 7 Marks

b) Evaluate $\int_0^{2\pi} \frac{Sin3\theta}{5-3\cos\theta} d\theta$ using Residue theorem. 7 Marks

(OR)

8 a) Evaluate $\int_C \frac{(2z+1)^2}{(4z^3+z)} dz$ where c is the circle $|z| = 1$. 7 Marks

b) Evaluate $\int_{-\infty}^{\infty} \frac{x^2}{(x^2+1)(x^2+4)} dx$ using Residue theorem. 7 Marks

UNIT-V

9 a) Show that the transformation $W = \frac{2z+3}{z-4}$ maps the circle $x^2+y^2-4x = 0$ on the straight line $4u+3= 0$. 7 Marks

b) Find the Bilinear transformation which maps the points $z = 1, i, -1$ into the points $w = 0, 1, \infty$. 7 Marks

(OR)

10 a) Find the image of the circle $|z| = 2$ under the transformation $w = z +3 +2i$. 7 Marks

b) Discuss 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 May - 2016

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) An anti-aircraft gun take a maximum of 4 shots at an enemy plane moving away from it. The probability of hitting the plane at the first, second, third and fourth shots are 0.4, 0.3, 0.2, 0.1 respectively. Determine the probability that the gun hits the plane. 7 Marks

b) The probability density function of a variate X is as follows: 7 Marks

X = x	0	1	2	3	4	5	6
P(x)	k	3k	5k	7k	9k	11k	13k

Compute (i) $P(X < 4)$ (ii) $P(3 < X \leq 6)$ (iii) $P(X \geq 5)$.

(OR)

2 a) 7 Marks

A continuous random variable X is defined by $f(x) = \begin{cases} \frac{1}{16}(3+x)^2, & \text{if } -3 \leq x \leq -1 \\ \frac{1}{16}(6-2x^2), & \text{if } -1 \leq x < 1 \\ \frac{1}{16}(3-x)^2, & \text{if } 1 \leq x \leq 3 \\ 0, & \text{elsewhere.} \end{cases}$

Verify that f(x) is a density function and also find the mean value of X.

b) In a factory, machine **A** produces 40% of the output and machine **B** produces 60%. On the average, 9 items in 1000 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**? 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) 1000 students had written an examination the mean of test is 35 and standard deviation is 5. Assume distribution is normal. Find 7 Marks
i) How many students get the marks between 25 to 40
ii) How many students get the marks more than 50 to 40
iii) How many students get the marks below 20
iv) How many students get the more than marks 50

b) Derive mean and variance of Binomial distribution. 7 Marks

UNIT-III

5 a) The Wilson Piston Company manufactures pistons for Lawnguy movers, and the quality diameter of each piston must be carefully monitored. Jeff Wilson, the quality control engineer, has sampled 8 pistons from each of the last 8 batches of 500 pistons and has recorded the following results, with sample mean $\overline{X}$ and range R measured in centimeters. 7 Marks

Batch	1	2	3	4	5	6	7	8
$\overline{X}$	15.85	15.95	15.86	15.84	15.91	15.81	15.86	15.84
R	0.15	0.17	0.18	0.16	0.14	0.21	0.13	0.22

i) Use the data above to help Wilson construct a $\overline{X}$ chart.
ii) Is the production process in-control? Explain.

b) Psychological tests of intelligence and of engineering ability were applied to 10 students. Here is a record of ungrouped data showing Intelligence Ratio (I.R) and Engineering Ratio (E.R) calculate the co-efficient of correlation. 7 Marks

Student	A	B	C	D	E	F	G	H	I	J
I.R	105	104	102	101	100	99	98	96	93	92
E.R	101	103	100	98	95	96	104	92	97	94

(OR)

6 a) The number of defective items in 20 samples, containing 2000 items are 425, 430, 216, 341, 225, 322, 280, 306, 337, 305, 356, 402, 216, 264, 126, 409, 193, 280, 326, 389. 7 Marks
Calculate the values for central line and the control limits for P-Chart.

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

UNIT-IV

7 a) A population consists of 2, 5, 12, 34. Consider all samples of size two, which can be drawn with replacement calculate: 7 Marks
i) Population mean
ii) Population standard deviation
iii) Mean of the means of sampling distribution

b) Explain briefly type-I and type – II errors with suitable exempla. 7 Marks

(OR)

8 a) Define the Level of significance and critical Region. 7 Marks

b) In 64 randomly selected hours of production, the mean and standard deviation of the number of acceptance pieces produced by an automatic stamping machine are 1.038 and 0.146 at the 0.05 level of significance, test whether the mean is greater than 1.00. 7 Marks

UNIT-V

9 a) The time taken by workers in performing a job by method I and method II is given below: 7 Marks

Method I	20	16	26	27	23	22	-
Method II	27	33	42	35	32	34	38

Do the data show that the variances of time distribution from population from which these samples are drawn do not differ significantly?

b) A dice is thrown 60 times with the following results. Test the goodness of fit at 5% level. 7 Marks

Face	1	2	3	4	5	6
Frequency	8	7	12	8	14	11

(OR)

10 a) A random sample of 10 boys had the following I.Q's : 70, 120, 110, 101, 88, 83, 95, 98,107, 100. 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) Two researchers adopted different sampling techniques while investigating some group of students to find the number of students falling into different intelligence level. The results are as follows: 7 Marks

Researchers	Below Average	Average	Above Average	Genius	Total
X	86	60	44	10	200
Y	40	33	25	2	100
Total	126	93	69	12	300

Would you say that the sampling techniques adopted by the two researchers are significantly different?

CODE No.:14BT3HS01 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations May - 2016

ENVIRONMENTAL SCIENCES

[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)	Briefly explain the importance and multidisciplinary nature of Environmental Studies.	7 Marks
	b)	Explain the importance of public awareness on Environment and how can you approach it.	7 Marks

(OR)

2		Explain the impacts of Modern Agricultural system on Environment and Human health.	14 Marks

UNIT-II

3		What is an ecosystem? Explain the structure and functions of different components of ecosystem.	14 Marks

(OR)

4	a)	What do you mean by biodiversity? Explain the importance of biodiversity to the mankind.	7 Marks
	b)	Explain the threats that lead to loss of biodiversity. Suggest methods adopted for conservation of biodiversity.	7 Marks

UNIT-III

5	a)	Write a detailed note on various methods adopted for disposal of municipal solid wastes. Discuss the merits and demerits of each method.	7 Marks
	b)	Explain the working principles of cyclones and fabric filters with help of sketches.	7 Marks

(OR)

6	a)	What do you think are the causes of water pollution? Explain the possible methods to reduce water pollution in the future.	7 Marks
	b)	What do you understand by thermal pollution? Explain the environmental impacts of thermal pollution.	7 Marks

UNIT-IV

7	a)	What is green house effect? Explain the causes and effects of green house effect.	7 Marks
	b)	Explain the major causes for depletion of ozone layer. List the effects of ozone layer depletion.	7 Marks

(OR)

8		Write a detailed notes on: i) Environmental legislation. ii) Sustainable development.	14 Marks

UNIT-V

9		Narrate what kind of information you would collect when you want present a case study based on a visit to a village affected by fluoride in drinking water. Also make a report based on the information collected.	14 Marks
		(OR)	
10	a)	Explain in detail, how population growth can impact the environment.	7 Marks
	b)	Briefly outline the methods adopted by different nations for controlling population growth.	7 Marks

CODE No.:14BT30101 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations May - 2016

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 about geology and its sub-branches. Discuss its role in civil engineering.	14 Marks
		(OR)	
2		What is meant by soil erosion? Mention different types of erosion and what are the measures to stop erosion.	14 Marks

UNIT-II

3		Describe the importance of sedimentary rocks in civil engineering.	14 Marks
		(OR)	
4		Describe the Doris attrition test and Soundness test. How these two test results can be used?	14 Marks

UNIT-III

5		Describe the folds, basing on the position of axial plane and degree of compression of beds.	14 Marks
		(OR)	
6		Explain the radio metric and geothermal methods.	14 Marks

UNIT-IV

7		Write the hydraulic properties of rocks and geological controls on ground water movement.	14 Marks
		(OR)	
8	a)	Write the causes of earthquakes.	7 Marks
	b)	Describe seismic waves.	7 Marks

UNIT-V

9		What is meant by reservoir silting? Explain the methods to control reservoir silting.	14 Marks
		(OR)	
10		Write the comparative study of tunneling operation in igneous, sedimentary and metamorphic rocks.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations May - 2016

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) Find the force 'P' acting at C in the bar shown in Fig.1. Find the extension of the bar if $E = 2 \times 10^5$ MPa. 7 Marks

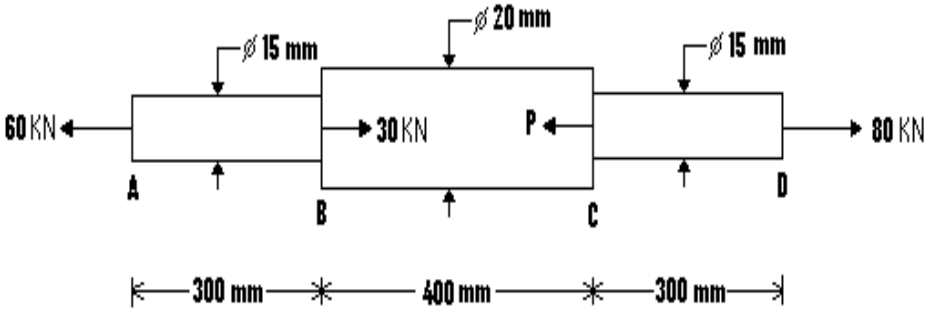

Fig.1

b) A bar of 20mm diameter is tested in tension. It is observed that when a load of 37.7 kN is applied, the extension measured over a gauge length of 200mm is 0.12mm and contraction in diameter is 0.0036mm. Find Poisson's ratio and Young's modulus. 7 Marks

(OR)

2 A round copper rod, 560mm long, has a diameter of 30mm over a length of 200mm, a diameter of 20mm over a length of 200mm and a diameter of 10mm over its remaining length. Determine the stresses in each section and elongation of the rod when it is subjected to a pull of 30 kN. Take $E = 100 kN/mm^2$. 14 Marks

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) Prove that the maximum shear stress in a circular section of a beam is 4/3 times the average shear stress. 7 Marks

b) Sketch the shear stress distribution across the depth of a T-section having a horizontal flange of 300mm x 20mm and a centrally placed web of clear dimensions 30mm x 200mm.The section is subjected to a maximum shear force of 100kN. Also determine the ratio of maximum shear stress to average shear stress. 7 Marks

(OR)

6 a) Explain, what do you understand by pure bending. List out all the assumptions in the theory of simple bending. 7 Marks

b) Determine the safe load carrying capacity U.D.L. over a simply supported span of 8 m. The cross section of the beam is rectangular of size 300mm x 500mm with a circular hole of diameter 200mm with its centre at 200 mm from the soffit. The allowable stresses in tension and compression are 150N/mm^2 and 100N/mm^2 respectively. 7 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 200 r.p.m. 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 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

CODE No.:14BT30103 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations May - 2016

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)	Describe briefly the main characteristics of building stones.	7 Marks
	b)	Describe the qualities of first class building bricks and indicate how they are influenced by the nature of clay used, process of manufacture and manner of firing.	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)	Explain the process of manufacture of Wrought iron with the help of neat sketch.	7 Marks
	b)	Enumerate the properties and uses of Wrought iron.	7 Marks
		(OR)	
4	a)	Explain the process of manufacture of Steel with the help of neat sketch.	7 Marks
	b)	Briefly outline the various types of Steel and their properties.	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	a)	How the compression strength is related to tensile strength of concrete?	7 Marks
	b)	What is non-destructive testing? What is the necessity of non-destructive testing of concrete?	7 Marks
		(OR)	
8	a)	Describe the procedure for determination of flexural strength of concrete.	7 Marks
	b)	Explain in detail the non-destructive testing of concrete using rebound hammer.	7 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 design for the following data: Maximum size of aggregate - 20mm (Angular)	14 Marks

Degree of workability	-	0.90 compaction factor
Quality Control	-	good
Type of Exposure	-	mild
Specific Gravity:		
i) Cement	-	3.12
ii) Sand	-	2.63
iii) Coarse aggregate	-	2.66
Water absorption:		
i) Coarse aggregate	-	0.5%
ii) Fine aggregate	-	1.0%
Free surface moisture:		
i) Coarse aggregate	-	Nil
ii) Fine aggregate	-	2.2%

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 May - 2016

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 Explain the terms: 14 Marks
(i) Dynamic viscosity and (ii) Kinematic viscosity.
Give their dimensions. Calculate the density, specific weight and weight of one litre of petrol of specific gravity 0.7.

(OR)

2 Differentiate between: 14 Marks
(i) Absolute and gauge pressure
(ii) Simple manometer and differential manometer.
A rectangular plane surface is 2m wide and 3m deep. It lies in vertical plane in water. Determine the total pressure and position of centre of pressure on the plane surface when its upper edge is horizontal and coincides with the water surface.

UNIT-II

3 a) Define Steady flow and Unsteady flow. 6 Marks
b) Show that $\Psi = x^2 - y^2$ represents on two dimensional irrotational flow. Find the potential function. 8 Marks

(OR)

4 a) What type of acceleration is to be expected if Stream lines are: 8 Marks
i) parallel and equidistant ii) straight and converging
iii) curved but equispaced iv) curved and converging
b) Derive the equation for a stream line. 6 Marks

UNIT-III

5 A pipeline carrying oil of specific gravity 0.87., changes in diameter from 200mm diameter at a position A to 500mm diameter at a position B which is 4m at a higher level. If the pressure at A and B are 9.81 N/cm^2 and 5.886 N/cm^2 respectively and the discharge is 200 litres/s, determine the loss of head and direction of flow. 14 Marks

(OR)

6 Crude oil of specific gravity 0.85 flows upwards at a volume rate of flow of 60 litres per second through a vertical venturimeter with an inlet diameter of 200mm and a throat diameter of 100mm. The coefficient of discharge of the venturimeter is 0.98. The vertical distance between the pressure tappings is 300mm. (i) if two pressure gauges are connected at the tappings such that they are positioned at the levels of their corresponding tapping points, determine the difference of readings in N/mm^2 of the two pressure gauges. (ii) If a mercury differential manometer is connected, in place of pressure gauges, to the tappings such that the connecting tube up to mercury are filled with oil, determine the difference in the level of the mercury column. 14 Marks

UNIT-IV

7 Describe the Reynolds's experiment with a neat sketch. Explain how would you distinguish between hydro dynamically smooth and rough boundaries. 14 Marks

(OR)

8 A laminar flow is taking place in a pipe of diameter 200mm. The maximum velocity is 1.5 m/s. Find the mean velocity and the radius at which this occurs. Also calculate the velocity at 4cm from the wall of the pipe. 14 Marks

UNIT-V

9 a) Define Reynold's Model Law and explain its importance. 4 Marks

b) A pipe of diameter 1.5m is required to transport an oil of specific gravity 0.90 and viscosity 3×10^{-2} poise at the rate of 3000 litre/s. Test were conducted on a 15cm diameter pipe using water at 200 ^{o}C. Find the velocity and rate of flow in the model. Viscosity of water at 200 ^{o}C = 0.01 poise. 10 Marks

(OR)

10 a) The discharge through weir is 1.5m^3/s. Find the discharge through the model of the weir if the horizontal dimension of the model = 1/50 the horizontal dimension of the prototype and vertical dimension of the model = 1/10 the vertical dimension of the prototype. 7 Marks

b) State Buckingham's π theorem. What do you mean by repeating variables? How are the repeating variables selected in dimensional analysis? 7 Marks

CODE No.:14BT30201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations May - 2016

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 due to a line charge.	7 Marks
	b)	Point charges 5nc and -2nc are located at (2, 0, 4) and (-3, 0, 5) respectively. Find *E* at (1, -3, 7).	7 Marks

(OR)

2	a)	State and explain Gauss law by considering a uniformly charged sphere and write down the applications of Gauss law to symmetrical charge distributions.	7 Marks
	b)	What is electric potential? Explain potential for different charge distributions and potential gradient.	7 Marks

UNIT-II

3	a)	Define current density. How many types of current densities are there? Obtain the expression for point form of ohms law.	7 Marks
	b)	A dielectric sphere of radius 10cm has a point charge ($\varepsilon_r = 5.7$) of 2pc placed at its centre. Calculate: i) Surface density of polarization charge on the surface of the sphere ii) The force exerted by the charge on a 4pc point charge placed on the sphere.	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 prove Biot-Savort's law.	7 Marks
	b)	Find the Magnetic Field Intensity at point P(2,2,3) caused by a current filament of 25 A in the $\mathbf{a_z}$ direction and extending from Z = 0 to Z = 6.	7 Marks

(OR)

6	a)	Write Maxwell's Fourth equation in Integral form and explain.	7 Marks
	b)	Obtain the expression for Magnetic Field Intensity due to a infinitely long co-axial transmission line by applying Ampere's circuital Law.	7 Marks

UNIT-IV

7	a)	State and explain Lorentz force Equation.	7 Marks
	b)	The force between two long Parallel conductors is 25 Kg/m. The conductors spacing of 20cm. If one conductor carries twice the current of the other, calculate the current in each conductor.	7 Marks

(OR)

8	a)	What is Magnetic Dipole? Derive the expression for Magnetic Dipole moment.	7 Marks
	b)	What is the Maximum torque on a square loop of 100 turns in a field of uniform flux density is 2 wb/m^2. The loop has 10cm side and carries a current of 5A.	7 Marks

UNIT-V

9	a)	Define displacement current. Derive an expression for displacement current density.	7 Marks
	b)	Discuss about motional and transformer induced **emf**s.	7 Marks
		(OR)	
10	a)	Represent Maxwell's equations in differential form and integral form and explain their importance.	7 Marks
	b)	Explain the Faradays laws of electromagnetic induction.	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 May - 2016

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)	Explain the constructional features of a D.C machine and principle of its operation.	7 Marks
	b)	What is co-energy? Derive an expression for force in a singly excited magnetic field system.	7 Marks
		(OR)	
2	a)	Discuss the principle of operation of D.C 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

UNIT-II

3	a)	Draw the winding diagrams of simplex and multiplex lap winding. Discuss their advantages and disadvantages.	7 Marks
	b)	A 4-pole lap wound armature has 144 slots with two coil sides per slot, each coil having two turns. If the flux per pole is 20mwb and the armature rotates at 720 r.p.m. What is the induced voltage?	7 Marks
		(OR)	
4		Briefly discuss about the armature reaction and its effects on the operation of D.C machines. How the armature reaction is minimized?	14 Marks

UNIT-III

5	a)	Define the terms critical speed and critical field resistance relating to D.C shunt generator. Also explain the voltage build up process when the generator is driven at constant speed.	7 Marks
	b)	An 8-pole D.C shunt generator has 778 wave connected armature conductors running at 500 r.p.m supplies a load of 12.5 ohm resistance at a terminal voltage of 250 V. The armature resistance is 0.24 ohm and the field resistance is 250 ohm. Find out the armature current, the induced **emf** and the flux per pole.	7 Marks
		(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 254 V. When the machine is loaded, the terminal voltage drops down to 240 V. Neglecting armature reaction, determine the load current, if the armature resistance is 0.04 ohm and the field circuit resistance is 24 ohm.	7 Marks

UNIT-IV

7 a) Explain with circuit diagram the armature voltage control method of speed control in D.C motors. 7 Marks

b) A 220 V shunt motor has an armature resistance of 0.5 ohm and takes a current of 40 A on full load. By how much must the main flux be reduced to raise the speed by 50% if the developed torque is constant? 7 Marks

(OR)

8 a) Explain the necessity of a starter for a D.C motor and explain the operation of a four point starter. 7 Marks

b) The speed of a 50 HP (37.3 KW) series motor working on 500 V supply is 750 r.p.m at full load and 90 percent efficiency. If the load torque is made 350 N-m and a 5 ohm resistance is connected in series with the machine, calculate the speed at which the machine will run. Assume the magnetic circuit to be unsaturated and the armature and field resistance to be 0.5 ohm. 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 D.C motor, with its field normally excited, the speed drop from 1525 to 1475 r.p.m in 25 seconds. With an average load of 1.0 KW 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 D.C series machine by Field's test. 7 Marks

b) Two identical D.C machines when tested by Hopkinson's method, gave the following test results: 7 Marks

Field currents are 2.5 A and 2 A.
Line voltage is 220 V.
Line current including both the field currents is 10 A.
Motor armature current is 73 A.
The armature resistance of each machine is 0.05 Ω.

Calculate the efficiency of both the machines.

CODE No.:14BT30203 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations May - 2016

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

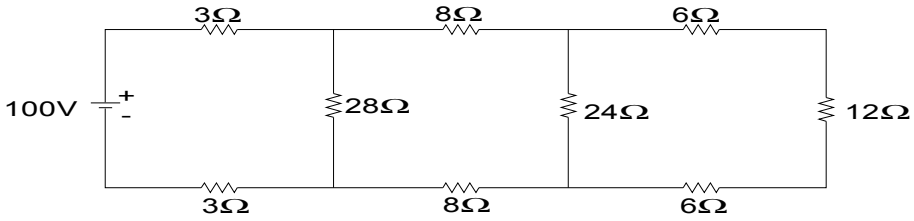

Fig.1

(OR)

2 a) Find i_1 and i_2 using mesh analysis for the Fig.2. 6 Marks

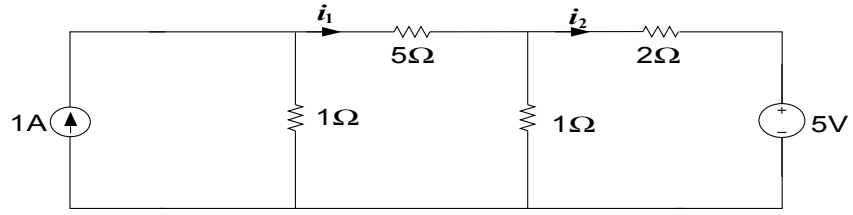

Fig.2.

b) Four resistances of equal value are available. Find; 8 Marks
i) The total equivalent conductance and total equivalent resistance ratio.
ii) The ratios of current drawn in each configuration.
iii) The ratios of power drawn by each configuration in each element.
Considering that the supply voltage is same when the configuration is in series and parallel.

UNIT-II

3 a) Find the current locus of series RC circuit, where R is variable and find maximum power. 7 Marks

b) A 2 Ω resistor, **1+j0.05 H** impedance and **10μF** capacitor are connected in parallel and excited by a 10 V sinusoidal source. Find the quality factor of the parallel circuit. 7 Marks

(OR)

4 a) Draw a typical parallel resonating circuit and from the fundamentals obtain the relationship between bandwidth, detuning factor, quality factor, impedance and its selectivity. 8 Marks

b) Two impedances $\mathbf{Z_1Z_1}$ and $\mathbf{Z_2Z_2}$ are in parallel across a **25 Hz**, **100 V** source. If $\mathbf{Z_1Z_1}$**= 9-j16 Ω,** $\mathbf{Z_2Z_2}$**= 13-j34 Ω**, find the currents through $\mathbf{Z_1Z_1}$ and $\mathbf{Z_2Z_2}$. Also find the total current, power factor angle of each branch and the entire circuit. 6 Marks

UNIT-III

5 a) Derive the relation between line and phase quantities in a three phase balanced star connection. 7 Marks

b) Three identical impedances of **(3+j4)Ω** are connected in delta. Find an equivalent star network such that the line current is the same when connected to the same supply. 7 Marks

(OR)

6 A balanced delta connected load is supplied from a symmetrical, 3-phase, 400V, 50Hz supply system. The current in each phase is 20A and lags behind its phase voltage by an angle 40^0. Calculate: i) The line current. ii) Total power. iii) Draw the phasor diagram showing the voltages and currents in the lines and the phases. iv) The wattmeter readings if two watt meters are used. 14 Marks

UNIT-IV

7 a) An iron ring has a mean circumferential length of 60cm and a uniform winding of 300 turns. An air gap has been made by a saw cut across the section of the ring. When a current of 1A flows through the coil, the flux density in the air gap is found to be 0.126mwb/m^2. How long is the air gap? Assume iron has a relative permeability of 300. 7 Marks

b) For the circuit shown in Fig.3 find an expression for the input impedance. 7 Marks

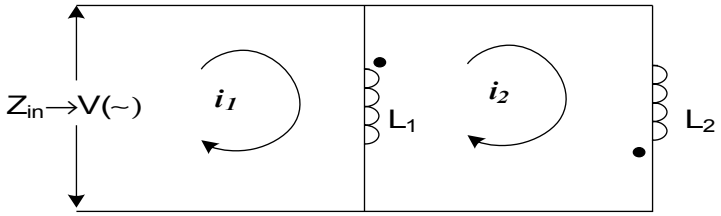

Fig.3

(OR)

8 a) What is a magnetic circuit? Compare magnetic circuit with electric circuit. 6 Marks

b) Explain about double tuned coupled circuits with necessary graphs and equations. 8 Marks

UNIT-V

9 a) State and explain Tellegen's theorem. 7 Marks

b) Find Norton's equivalent to the left of x-y terminal shown in Fig. 4. 7 Marks

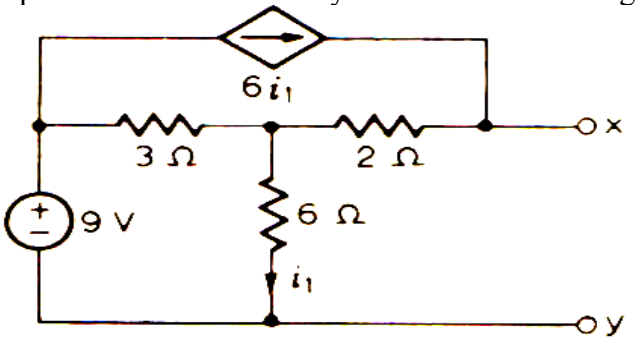

Fig.4

(OR)

10 a) Find the current in 10 ohm resistor of the circuit shown in Fig.5. 7 Marks

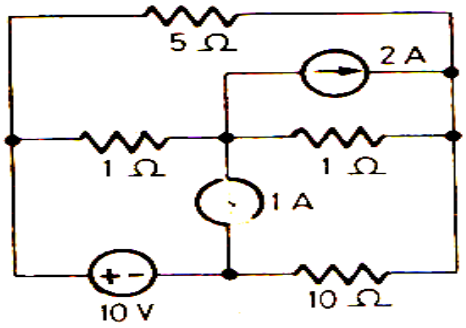

Fig.5

b) Assuming maximum power transfer from the source to R, find the value of this amount of power in the circuit shown in Fig.6. 7 Marks

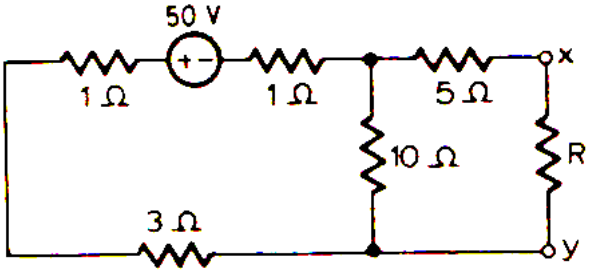

Fig.6

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations May - 2016

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)	Derive the EMF equation of a DC Generator.	7 Marks
	b)	Explain various types of losses in a DC Machine.	7 Marks
		(OR)	
2	a)	With the help of neat diagram, explain how to control the speed of a DC Shunt motor with the field control method.	8 Marks
	b)	A shunt generator delivers 450A at 230V and the resistance of the shunt field and armature are 50Ω and 0.03Ω respectively. Calculate the generated EMF.	6 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		Explain in detail about the production of three phase voltages with neat figures and derive the relation between speed 'N' and frequency 'f' from the fundamentals.	14 Marks
		(OR)	
6	a)	Derive the relation between line and phase quantities in a star connected network.	7 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.	7 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 principle operation of stepper motor with neat diagrams and list out the applications.	14 Marks
		(OR)	
10	a)	Explain the construction and principle operation of split phase induction motor.	7 Marks
	b)	List out the applications of shaded pole motor and universal motor.	7 Marks

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CODE No.:14BT30232 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations May - 2016

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) State and explain Ohm's law and list out its limitations. 6 Marks

b) Find the current through 1Ω resistor shown in Fig.1 using network reduction techniques. 8 Marks

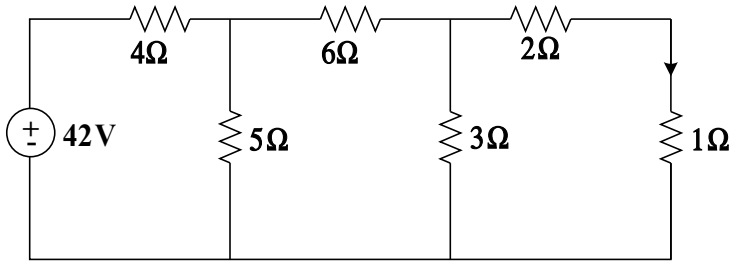

Fig.1.

(OR)

2 a) Four equal resistances are available in a circuit. Derive the ratio of the: 7 Marks
i) equivalent resistances when they are connected in parallel.
ii) current through each element when they are connected in parallel.

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) Obtain the fundamental sinusoidal response of a series RL circuit. 7 Marks

b) An r.m.s voltage in a three phase star connected circuit is given by 231V(Ph-N). Write the instantaneous voltage expression. If the current in each phase lag the corresponding phase voltage by 30^0, what are the expressions of instantaneous currents? 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) Derive the expressions of Transient response of RL series 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 Derive the expressions of Transient response of RC series circuit with sinusoidal excitation using Laplace transform approach. 14 Marks

UNIT-IV

7 a) Derive the relations of h- parameters interms 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 $R_o = 700\Omega$. 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 Maximum power transfer theorem with a suitable example. 7 Marks

b) Find the amount of power in the circuit shown in Fig.2, if the maximum power transfers from the source to load resistance. 7 Marks

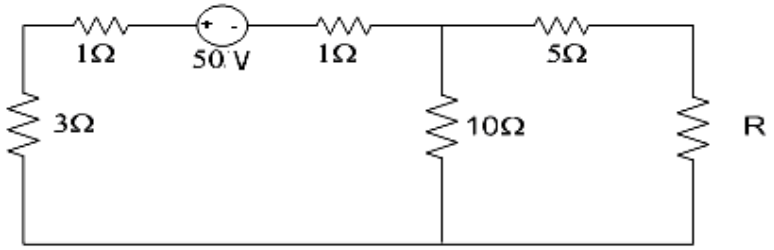

Fig.2

(OR)

10 a) State and explain Milliman's theorem with a suitable example. 8 Marks

b) Find current through 1Ω resistor for the Fig.3 using Milliman's theorem. 6 Marks

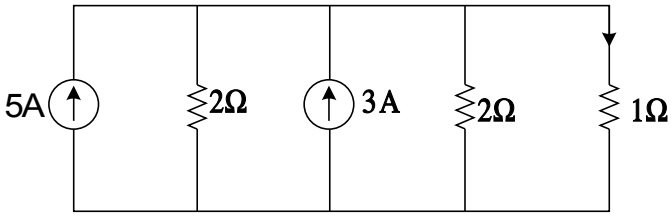

Fig.3

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations May - 2016

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)	State and explain Ohm's law.	6 Marks
	b)	Define the following terms: i) Frequency ii) Time period iii) Amplitude iv) One cycle	8 Marks
		(OR)	
2	a)	Define the following terms: i) Power factor ii) r.m.s value iii) Apparent Power iv) Potential difference	8 Marks
	b)	R_{ab}, R_{bc}, R_{ca} are connected in delta connection. Derive the expressions for equivalent star connection.	6 Marks

UNIT-II

3	a)	Explain with neat diagram, the operation of fluorescent lamp.	7 Marks
	b)	Explain the construction details of single phase transformer.	7 Marks
		(OR)	
4	a)	Explain the necessity of earthing and explain about plate earthing.	7 Marks
	b)	Explain the operation of single phase capacitor start induction motor.	7 Marks

PART - B

UNIT-III

5		Define Welding. With a neat sketch, explain process of TIG welding.	14 Marks
		(OR)	
6		With a neat sketch, explain the working of four stroke diesel engine.	14 Marks

UNIT-IV

7	a)	Explain the working principle of Vapor Compression refrigeration system with a neat sketch.	7 Marks
	b)	Define refrigerant. Name any eight refrigerants commonly used in Vapor Compression 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)	Give the classification of compressors and explain its working principle.	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:	7 Marks

i) Excavators ii) Power shovels

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations May - 2016

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) Define the following: 6 Marks
i) Electric Field. ii) Potential Difference. iii) Electric Current

b) Derive and explain the relations of voltage, current and power with series and parallel resistive circuits. 8 Marks

(OR)

2 a) Find i_1 and i_2 using mesh analysis for figure shown in Fig.1. 6 Marks

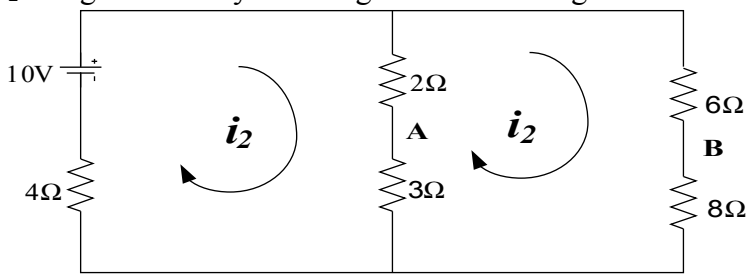

Fig.1.

b) Derive the expressions of equivalent resistances of Star network for the equivalent Delta network. 8 Marks

UNIT-II

3 a) Derive the expressions of Average power and Instantaneous power of RL series circuit with the help of phasor diagrams. 10 Marks

b) A choke coil takes a current of 205A when connected across 250V, 50Hz mains and consumes 400 watts. Find i) Power factor. ii) Resistance of the circuit. 4 Marks

(OR)

4 a) Derive the expressions of RMS value and Average value of fundamental sinusoidal quantity. 8 Marks

b) A capacitor and resistor are connected in series with 240V, 50Hz supply. Find the value of C so that R absorbs 300W at 100V. Also find maximum charge and maximum energy stored in C. 6 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) What is a transformer? How does it transfer electrical energy from one circuit to another? 7 Marks

b) A 3-phase induction motor is wound for 4 poles and is supplied from 50 Hz systems. Calculate: 7 Marks
i) the synchronous speed.
ii) the speed of the motor when slip is 4% .
iii) the rotor current frequency when the motor runs at 600 r.p.m.

UNIT-IV

7	Describe the moving coil permanent magnet instrument with neat circuit diagram and list out its merits and demerits.	14 Marks
	(OR)	
8	Explain the digital multi-meter with neat diagram and give the applications.	14 Marks

UNIT-V

9	What is an oscillator? Explain the construction and operation of RC phase shift oscillator with neat diagrams.	14 Marks
	(OR)	
10	Explain construction and principle operation of full wave rectifier with the help of wave forms and also derive the expressions of an average and RMS values of output voltage.	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations May - 2016

BASIC ELECTRICAL ENGINEERING

[Computer Science and Engineering, Information Technology]

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

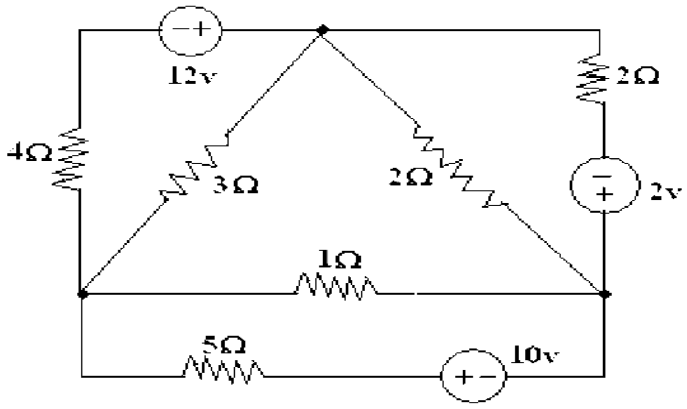
Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define and explain Ohms law.	4 Marks
	b)	Three resistances of 3 Ω, 5 Ω and 6 Ω are connected in parallel. Find the resultant resistance of the combination.	4 Marks
	c)	Explain the procedure to determine an equivalent Delta connection for a given Star connection.	6 Marks

(OR)

2		In the figure shown below, find the current through 5Ω resistor using mesh analysis.	14 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 the (i) circuit current (ii) phase angle (iii) power factor (iv) power consumed.	8 Marks

(OR)

4	a)	Define and explain RMS value and Average value in alternating quantities.	6 Marks
	b)	An ac circuit consists of a pure resistance of 10Ω and is connected to an **ac** supply of 230V, 50 Hz. Calculate the (i) current (ii) power consumed (iii) equations for voltage and current.	8 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 30mWb. If the load resistance is 15Ω, determine the terminal voltage.	8 Marks

UNIT-IV

7	a)	With neat diagram, explain about the construction of a core type transformer. Also explain about windings used in this type of transformer.	8 Marks
	b)	Discuss about the various types of core losses that occur in transformers.	6 Marks

(OR)

8	a)	With neat sketch, explain about the constructional details of Wound rotor Induction motor.	8 Marks
	b)	Draw the Connection diagram of split-phase induction motor and also explain the principle of operation.	6 Marks

UNIT-V

9	a)	Discuss the classification of electrical instruments.	6 Marks
	b)	Explain the significance of controlling torque and damping torque relevant to the operation of indicating instruments.	8 Marks

(OR)

10		What are permanent magnet moving coil (PMMC) instruments? What are their applications? Describe the construction and working of PMMC instrument.	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations May - 2016

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)	State and explain Ohms law. What are its limitations?	7 Marks
	b)	A capacitance of 40 μF has a voltage described as follows: for $0 > t > 2$ ms, $v = 35 \times 10^3 t$ (V). Determine i, p and w at t = 1.5 ms.	7 Marks
		(OR)	
2	a)	State and prove Kirchhoff's current law.	7 Marks
	b)	A 12V battery is connected in a circuit having three series-connected resistors having resistance's of 4 ohms, 9 ohms and 11 ohms. Determine the current flowing through and the p.d. across the 9 ohms resistor. Find also the power dissipated in the 11 ohms resistor.	7 Marks

UNIT-II

3	a)	Define the terms amplitude, frequency, RMS value, Average value of an alternating quantity with illustration.	6 Marks
	b)	Show that in an AC circuit, current through purely inductive circuit lags the applied voltage by 90^0.	8 Marks
		(OR)	
4	a)	The current in series circuit R = 4Ω and L = 31 mH lags the applied voltage by 80^0. Determine the source frequency and Impedance of the circuit.	6 Marks
	b)	Derive the expression for the average value of pure sinusoidal voltage.	8 Marks

UNIT-III

5	a)	Draw the various characteristics of different types of **dc** generators.	7 Marks
	b)	Explain the principle of operation of a **dc** generator.	7 Marks
		(OR)	
6	a)	Draw the output versus efficiency, torque and speed characteristics of various types of **dc** motor.	7 Marks
	b)	Describe the constructional details of **dc** motor.	7 Marks

UNIT-IV

7	a)	Explain the working principle of an alternator.	7 Marks
	b)	Define efficiency and regulation. How to obtain efficiency and regulation of a transformer?	7 Marks
		(OR)	
8	a)	Explain the working principle of ac servomotor.	7 Marks
	b)	Explain the working principle of stepper motor.	7 Marks

UNIT-V

9	a)	Differentiate between time variant and time invariant control systems.	7 Marks
	b)	Mention some examples for linear and nonlinear systems.	7 Marks
		(OR)	

10 a) Obtain the mathematical model for any physical system. 7 Marks

b) With an example, explain the block diagram reduction technique. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations May - 2016

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 65 MN/m^2 (tensile) and 35 MN/m^2 (compressive). Find the magnitude and direction of the resultant stress on planes makes angles of 20^o and 65^o 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 the terms Shear Force and Bending Moment at a cross-section in a beam. What is the purpose of drawing SFD and BMD? 4 Marks

b) A cantilever of length 4m carries a uniformly distributed load of 3 kN/m run over the whole length and two point loads of 4 kN and 2.5 kN are placed at 1m and 2m respectively from the fixed end. Draw the Shear force and Bending Moment diagrams. 10 Marks

(OR)

4 a) Define point of contra flexure and show that at the point of maximum bending moment and shear force is generally zero. 4 Marks

b) An overhanging beam ABC is simply supported at A and B over a span of 6m and BC overhangs by 3m. If the supported span AB carries central concentrated load of 8 kN and overhanging span BC carries 2 kN/m completely, draw Shear force and Bending Moment diagrams indicating salient points. 10 Marks

UNIT-III

5 a) Differentiate between cantilever beam, continuous beam and overhanging beams. 4 Marks

b) A simply supported beam of 6m span is subjected to two point loads of each 60 kN at one third span. The permissible bending stress for the beam material is 120 N/mm^2. Design the beam as a rectangular section keeping breadth as half of depth. Neglect self weight of the beam. 10 Marks

(OR)

6 a) Prove that for a solid circular section maximum shear stress is 4/3 of mean shear stress. 6 Marks

b) The average shear stress at a section of a simply supported rectangular beam of cross section 100mm × 200mm is 0.4 N/mm^2. Determine: 8 Marks
i) The shear force at the section ii) Maximum shear stress at the section.
iii) Shear stress at a point on the section 5cm above neutral axis.

UNIT-IV

7	a)	State and prove the moment area theorem.	6 Marks
	b)	A cantilever of length 2m carries a uniformly distributed load 2 KN/m over a length of 1m from the free end, and a point load of 1 KN at the free end. Find the slope and deflection at the free end if E = 2.1 **x** 10^5 N/mm^2 and I = 6.667 **x** 10^7 mm^4.	8 Marks

(OR)

8		A simply supported beam of 8m length carries two point loads of 64 KN and 48 KN at 1m and 4m respectively from the left hand end. Find the deflection under each load and the maximum deflection. Take E = 210 GPa and I = 180 **x** 10^6 mm^4.	14 Marks

UNIT-V

9	a)	Calculate the increase in volume enclosed by a boiler shell 2.4m long and 1.0m in diameter when it is subjected to an internal pressure of 160 N/cm^2. The wall thickness is such that the maximum tensile stress in shell is 2,150 N/cm^2 under this pressure. Take E = 20 **x** 10^6 N/cm^2 and Poisson's ratio as 0.3.	6 Marks
	b)	A cylindrical container has 52cm external diameter and 1cm thickness, the length being 2m. Find the change in the external diameter and the length, when it is changed to 1,000 N/cm^2 internal pressures. Take E = 20 **x** 10^6 N/cm^2 and Poisson's ratio as 0.3.	8 Marks

(OR)

10		Plot a curve showing the percentage increase in maximum circumferential stress over average circumferential stress for ratios of thickness to inside radius of thick walled cylinder varying from 0 to 3. The cylinder has only internal pressure.	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations May - 2016

THERMODYNAMICS

[Mechanical Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Define following: 9 Marks
i) Thermo dynamic state.
ii) Quasistatic process.
iii) Cyclic and non cyclic process.

b) Show that the work and heat are path functions. 5 Marks

(OR)

2 a) If a gas of volume 6000cm^3 and at pressure of 100 kPa is compressed quasistatically according to pV2 = constant until the volume becomes 2000cm^3, determine the final pressure and the work transfer. 8 Marks

b) State and explain Zeroth law of thermodynamics. 6 Marks

UNIT-II

3 a) Write three corollaries of the First law of thermodynamics. 4 Marks

b) A perfect gas for which the specific heat is 1.4 occupies a volume of 0.3 m^3 at 1 bar and 27 ^{o}C. The gas undergoes a compression to 0.06m^3. Find the heat absorbed or rejected by the gas for each of the following methods of compression, 10 Marks
i) Constant pressure ii) Isothermal,
iii) Hyperbolic, iv) Adiabatic
v) according to the law $pV^{1.1}$ = constant.
For gas R = 0.287 kJ/kgK and γ = 1.4.

(OR)

4 a) State the Kelivin-Planck and Clausius statements of second law of thermodynamics. Show that they are equal. 10 Marks

b) Define the term coefficient of performance as applied to a refrigerator and a pump. Show that $COP_{hp} = COP_{ref} + 1$. 4 Marks

UNIT-III

5 a) Define irreversibility. Show that irreversibility of a process is given by the product of temperature of surroundings and the net entropy change. 8 Marks

b) In a certain heat exchanger, 50 kg of water is heated per minute from 50 ^{o}C to 110 ^{o}C by hot gases which enter the heat exchanger at 250 ^{o}C. If the flow rate of gases is 100 kg/min, estimate the net change of entropy. 6 Marks

(OR)

6 a) Define available and unavailable energy. 4 Marks

b) Air enters the heater at 27 ^{o}C and leaves at 67 ^{o}C, the pressure being constant at 4 bar. The heat source is at 260 ^{o}C and the surroundings are at 15 ^{o}C. Treating air as a perfect gas, find i) the gain in availability of the air, ii) the effectiveness of the heater. Also calculate the loss due to irreversibilities. 10 Marks

UNIT-IV

7 a) Explain the process of steam generation (change of phase of water) at constant pressure. Show the various stages on P-V and T-S diagrams. 8 Marks

b) Derive the Gibbsian relations. 6 Marks

(OR)

8 A gas mixture consists of 0.5 kg of carbon monoxide, 1 kg of carbon dioxide and 1.5 kg of nitrogen. Determine: 14 Marks

i) Mass fraction of each component.
ii) Mole fraction of each component.
iii) Average molar mass of the mixture.
iv) Gas constant of the mixture.

UNIT-V

9 a) Explain the cyclic processes of Stirling cycle with the help of P-V and T-S diagrams. 7 Marks

b) Which of the two cycles the Otto or Diesel is more efficient for the same compression ration? Prove. 7 Marks

(OR)

10 An engine working on the dual combustion cycle has a stoke volume of 0.0084 m^3 and a compression ratio of 15:1. The fuel has a calorific value of 41800 kJ/kg. The entry conditions of air to the cycle are 1 bar and 90 ^oC. The maximum pressure in the cycle is 65 bar and air-fuel ration is 21:1. 14 Marks

Find for the ideal cycle;

i) the thermal efficiency.
ii) the mean effective pressure.
iii) the fuel consumption per KWH.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations May - 2016

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. 7 Marks
(i) find the probability that both bulbs are defective
(ii) assuming that both are defective, find the probability that they came from box-1.

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 i^{th} trial? 5 Marks

b) Show that if the events $A_1, A_2 \ldots A_n$ are independent and $B_i = A_i$, then events $B_1, B_2, \ldots B_n$ are also independent. 5 Marks

c) A call occurs at time 't' is random point in the interval (0, 10). 4 Marks
Find p ($6 \leq t \leq 8$).

UNIT-II

3 a) State and prove the properties of probability density function. 6 Marks

b) If the probability density function of a random variable is given by 8 Marks
$\mathbf{F_x(x) = K(1-x^3); 0 < x < 1}$, Find the value of K and $F_x(x)$.

(OR)

4 a) Distinguish between discrete and continuous random variables. 6 Marks

b) A random variable X is Gaussian with mean = 0 and $\sigma_x = 1$. 8 Marks
i) What is the probability that $X > 2$?
ii) What is the probability that $|X| > 2$?

UNIT-III

5 a) Two random variable X and Y have the joint density 7 Marks
$f(x, y) = 2 - x - y$; $0 < x < 1, 0 < y < 1$
$= 0$, **otherwise**.
Show that $Cov(X, Y) = -1/11$.

b) Suppose the joint probability density function is given by 7 Marks
$f(x, y) = 2 - x - y$; $0 < x < 1, 0 < y < 1$
$= 0$, **otherwise**.
Obtain the marginal PDF of X and that of Y.
Hence or otherwise find $P[1/4 \leq y \leq 3/4]$

(OR)

6 a) A distribution with unknown mean μ has variance equal to 1.5. Use central limit 7 Marks

theorem to find how large a sample should be taken from the distribution in order that the probability will be atleast 0.95 that the sample mean will be within 0.5 of the population mean.

b) Statistically independent random variables X and Y have respective means $\overline{X}$ =1, Y = -0.5 . Their second moments are $\overline{X^2}$ = 4, $\overline{Y^2}$ = 2.75. Another random variable is defined as $W = 3X^2 + 2Y + 1$. Find R_{XY} C_{XY} $\overline{W}$. — 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) Differentiate between Correlated and Uncorrelated noise. — 6 Marks

b) For a radio operating at a temperature of 19 degree centigrade with a bandwidth of 12 KHz determine the thermal noise in dB. If the load resistance is 125 ohms, calculate the r.m.s noise voltage. — 8 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations May - 2016

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) Discuss about the temperature dependence of V-I characteristics of PN diode — 5 Marks

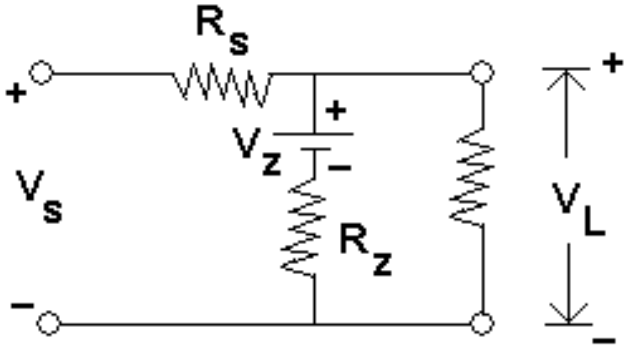
b) Distinguish between transition capacitance and diffusion capacitance of PN junction diode. — 4 Marks

c) Compare and contrast half wave and full-wave rectifiers. Mention any three applications of rectifier — 5 Marks

(OR)

2 a) Define law of junction. Explain about the term cut in voltage associated with PN junction diode. How do you obtain cut in voltage from forward V - I characteristics? — 7 Marks

b) For the Zener diode regulator $I_{L\,max} = 100$ mA; $I_{L\,min} = 0$; $V_Z = 16$ V; $R_Z = 0.05\Omega$ and V_S varies from 18 V to 20 V, $R_S = 10\ \Omega$. Nominal load voltage = 16 V. Determine: — 7 Marks



i) Maximum power dissipated by R_S.
ii) Maximum power dissipated by the diode.
iii) Minimum diode current.
iv) Voltage regulation for an input of 20 V.
v) Maximum power that has to be dissipated in R_S, if the output gets accidentally short circuited

UNIT-II

3 a) Sketch and explain the common base input and output characteristics. How do you draw these curves experimentally? — 10 Marks

b) Describe the Base-Width modulation. — 4 Marks

(OR)

4 a) Explain the working of the voltage divider bias circuit. Derive an expression for its stability factor. Explain how it is superior to other bias arrangements. — 10 Marks

b) Design an Emitter bias (or voltage divider bias) circuit for the specifications: $V_{CC} = 12$ V, $V_{CE} = 2$V, $I_C = 4$mA, $h_{FE} = 80$ — 4 Marks

UNIT-III

5	a)	Draw the circuit diagram of small signal CE amplifier circuit and give its equivalent hybrid model. What is the role of CC and CE?	6 Marks
	b)	Derive expressions for current gain, input impedance, output impedance and voltage gain of the CB configuration using hybrid parameter equivalent circuit.	8 Marks
		(OR)	
6	a)	Analyse the CC amplifier using approximate hybrid model.	8 Marks
	b)	Describe the simplified hybrid model.	6 Marks

UNIT-IV

7	a)	Draw the biasing circuit suitable for JFET and if the JFET is replaced by a MOSFET for what mode of operation it is valid and explain about the function of each component used in the circuit.	7 Marks
	b)	Define JFET parameters. Design a JFET biasing circuit for zero drain current drift, given $V_P = -3V$, $g_{mo} = 1.8$ m A/V, $I_{DSS} = 1.75$ m A, $R_D = 5k\Omega$.	7 Marks
		(OR)	
8	a)	Draw the structure of p channel JEET and explain its static drain and gate characteristics qualitatively.	7 Marks
	b)	Draw the Drain characteristics of Enhancement MOSFET and discuss the method of obtaining the output characteristics of the Depletion Enhancement MOSFET device.	7 Marks

UNIT-V

9	a)	Explain how tailoring of doping profiles improve the Varactor diode operation. Mention any three applications of it.	7 Marks
	b)	Explain the working principle of SCR with the help of V-I characteristics. Mention its applications.	7 Marks
		(OR)	
10	a)	What are the three main regions in the static characteristics of a UJT and what are the applications of these regions?	5 Marks
	b)	Explain in detail about the Schottky barrier diode. Mention its applications.	5 Marks
	c)	Discuss the favourable conditions for Tunnelling phenomena in Tunnel Diodes.	4 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations May - 2016

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 0.4 volts, 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 50 Hz with a 100 μF capacitor filter and 100Ω load.	7 Marks

UNIT-II

3	a)	Explain how transistor is used an amplifier.	7 Marks
	b)	Derive the relationship between **α** and **β**.	7 Marks
		(OR)	
4	a)	Derive an expression for the stability factor of a collector to base bias circuit.	7 Marks
	b)	Explain about measurement of h-parameters from transistor characteristics in CE configuration.	7 Marks

UNIT-III

5	a)	Compare CS, CD and CG configurations.	6 Marks
	b)	Derive an expression for drain current I_D is a function of gate to source voltage V_{GS} and drain-source voltage V_{DS}.	8 Marks
		(OR)	
6	a)	Explain the construction and working of Depletion MOSFET.	10 Marks
	b)	What is meant by Amplification and in what region of the characteristics the transistor is operated as amplifier?	4 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)	Draw the equivalent circuit of UJT and explain its operation with help of emitter characteristics.	7 Marks
	b)	Explain with the help of a circuit diagram the working of a UJT relaxation oscillator.	7 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

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations May - 2016

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	What is a doubly linked list and what are the operations on it? Write methods for each.	14 Marks
	(OR)	
2	Write an algorithm for deletion of an element and display the elements in a circular linked list.	14 Marks

UNIT-II

3	What is a stack? Write the applications of a stack. Write the algorithm for evaluating postfix expression using a stack.	14 Marks
	(OR)	
4	What is a queue? Explain various operations on queues.	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 graph? How is it represented? Write algorithm for graph creation and inserting a vertex.	14 Marks
	(OR)	
8	Write algorithms for Depth-first traversal and Breadth-first traversal.	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

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations May - 2016

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	6 Marks
	b)	What is a 2's Complement? Explain it with an example.	6 Marks
	c)	Explain how to subtract the given binary numbers using 2's complement with an example.	4 Marks

(OR)

2	a)	What is canonical form? Explain different canonical forms with an example.	7 Marks
	b)	Draw the logic diagram for the Boolean expression $F = A\overline{B} + \overline{C}D + ABC$.	7 Marks

UNIT-II

3	a)	Construct K-map for the following expression and obtain Minimal SOP expression. Implement the function with 2-level NAND-NAND form. f (A, B, C, D) = (A + C + D)(A + B + $\overline{D}$)(A + B + $\overline{C}$)($\overline{A}$ + B + $\overline{D}$)($\overline{A}$ + B + $\overline{D}$)[1].	8 Marks
	b)	Implement the following Boolean function F using the 2-level NAND-AND form F(A,B,C,D) = ∑(0, 1, 2, 3, 4, 8, 9, 12).	6 Marks

(OR)

4	a)	Simplify the following Boolean functions, using four variable maps F(w, x, y, z) =∑(0,1,4.5,6,7,8,9).	7 Marks
	b)	Simplify the following functions by first finding the Essential Prime Implicants F(w,x,y,z)= ∑(0,2,4,5,6,7,8,10,13,15)	7 Marks

UNIT-III

5	a)	Design a BCD to decimal decoder.	7 Marks
	b)	What is a multiplexer? Implement the following function with a multiplexer. F(A,B,C,D) = ∑(0,1,3,4,8,9,15)	7 Marks

(OR)

6	a)	What is a Combinational circuit? Explain it.	7 Marks
	b)	Implement full adder combinational circuit.	7 Marks

UNIT-IV

7	a)	Compare Combinational circuit with Sequential circuit.	7 Marks
	b)	What is Flip-Flop? Explain J-K and D-Flip-Flop.	7 Marks

(OR)

8		Implement 4-bit Synchronous counter with a neat diagram.	14 Marks

UNIT-V

9 a) Draw and explain the block diagram of PAL. 6 Marks

b) Implement the following Boolean functions using PAL. 8 Marks

w(A,B,C,D) = m (0,2,6,7,8,9,12,13)

x(A,B,C,D) = m (0,2,6,7,8,9,12,13,14)

y(A,B,C,D) = m (2,3,8,9,10,12,13)

z(A,B,C,D) = m (1,3,4,6,9,12,14).

(OR)

10 Explain in detail about Error Detection and Error Correction codes with examples. 14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations May - 2016

PRINCIPLES OF ELECTRICAL 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 Describe the construction of a Resistance standard. Also explain the techniques used to minimize the errors in them. 14 Marks

(OR)

2 a) Discuss CGS system of units and hence explain the Electromagnetic, Electrostatic and Practical systems of units. 8 Marks

b) Analyse the relationship between Electromagnetic and Electrostatic systems of units. 6 Marks

UNIT-II

3 Describe the working and construction details of a repulsion type moving iron instrument. Discuss its advantages and disadvantages. 14 Marks

(OR)

4 Discuss the following types of error in moving iron instruments: 14 Marks

i) Hystersis error.
ii) Temperature error.
iii) Error on account of stray magnetic fields.
iv) Error on account of change of frequency.

UNIT-III

5 Describe the construction and working of polar type potentiometer. Explain how an unknown voltage can be measured by using this potentiometer. 14 Marks

(OR)

6 Describe the working of Brooks Deflectional potentiometer. Explain its circuit and its advantages. 14 Marks

UNIT-IV

7 a) Classify Electrodynamometers and explain any two with suitable diagrams. 7 Marks

b) Explain working and constructional details of Single phase induction type energy meter. 7 Marks

(OR)

8 a) A 3-phase, 2-element energy meter has a constant of 0.2 revolution of disc per KWH. The meter is being used with a PT of ratio 22KV/220V and a CT of ratio 100/5A.If the line voltage is 220V, current is 10A, time to complete 10 revolutions is 30 seconds on unity power factor, determine the error expressed as a percentage of the correct reading. 7 Marks

b) Explain any two polyphase energy meters with neat sketch. 7 Marks

UNIT-V

9 a) Draw the circuit of a Kelvin's double bridge used for measurement of low resistances. Derive the conditions for balance. 7 Marks

b) In a Wheatstone bridge, the ratio arms AB = 10 Ω and BC = 100 Ω; CD = 10 Ω. The shunt across 10 Ω ratio arm has to be changed from 22310 to 27670 Ω, when the resistor R_2 was changed for R_1 in the arm DA. Calculate the difference between the resistances of R_1 and R_2. The bridge is balanced in both the conditions. 7 Marks

(OR)

10 Describe, how an unknown capacitance can be measured using De Sauty's bridge along with its phasor diagram. Give its limitations and explain how to overcome that. 14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations May - 2016

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 the terms True value, Accuracy and Precision.	7 Marks
	b)	Discuss in detail the various dynamic characteristics of a measuring system.	7 Marks
		(OR)	
2	a)	Draw and explain the transfer function of a Zero order system.	7 Marks
	b)	A strain gauge is bonded to a beam of 0.1m long and has a cross sectional area of 4 cm^2.Youngs modulus for steel is 20.7GN/m^2. The Strain gauge has a unstamped resistance of 240 ohms and a gauge factor of 2.2.When a load is applied the resistance of gauge changes by 0.013 ohms. Calculate the change in length of the steel beam and amount of force applied to the beam.	7 Marks

UNIT-II

3	a)	Explain the construction and working of a Potentiometer.	7 Marks
	b)	List the types of Thermistor and explain any one in detail.	7 Marks
		(OR)	
4	a)	List the applications of Magnetoresistor.	7 Marks
	b)	Explain the working of a LDR.	7 Marks

UNIT-III

5	a)	Demonstrate the working of capacitive transducers using variation of dielectric constant for measurement of linear displacement and show that change in capacitance is proportional to displacement. Also discuss about measurement of level of non-conducting liquid using same method.	7 Marks
	b)	Explain the construction, working, classification and applications of Resolvers with a neat diagram.	7 Marks
		(OR)	
6	a)	Explain about Hall Effect with a neat diagram and discuss how it can be used for measurement of current and displacement.	8 Marks
	b)	Explain, how a synchro transmitter and receiver pair can be used as transducers in the torque transmission mode.	6 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)	Demonstrate the working of Absolute Position Encoders.	7 Marks
	b)	What are Extrinsic and Intrinsic Optical Fiber Sensors? Explain one application under each category in brief with necessary diagrams.	7 Marks

(OR)

10	a)	Describe the steps of processing in the production of Thick Film Sensors. What are the substrates and initial base materials used in the process? In what atmosphere is the firing done at the final stage?	4 Marks
	b)	Discuss how selective gas sensors can be produced from the same initial base material and how their overall sensitivity can be controlled. Explain taking examples of gases such as H_2, CO and NH_3.	4 Marks
	c)	Demonstrate the working of Tachometer Encoder.	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations May - 2016

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)	State the Converse, Inverse and Contra positive of the statement "If x^2 is greater than zero, then x is not equal to zero".	6 Marks
	b)	Obtain the PCNF of **(~P→Q)∩ (Q↔P).**	8 Marks
		(OR)	
2	a)	Symbolize the statement "All men are giants".	5 Marks
	b)	Explain the rules for Automatic Theorem proving.	9 Marks

UNIT-II

3	a)	Define Lattice. Explain the properties of Lattice.	7 Marks
	b)	What is Poset? Draw the Hasse diagram of the Poset **(P(A), ≤), A={a.b,c,d}.**	7 Marks
		(OR)	
4	a)	Let X = {1,2,3,….7} and R = {(x,y)/x-y is divisible by 3}. Show that R is an Equivalence relation and draw its matrix and digraph.	7 Marks
	b)	Show that f(y) = y/2 is a partial recursive function.	7 Marks

UNIT-III

5	a)	Show that the set Z of all integers is a group under * such that $a * b = a + b - 1$.	7 Marks
	b)	Prove that the inverse of an element in a group is unique.	7 Marks
		(OR)	
6	a)	Define Isomorphism of Monoids with an example.	7 Marks
	b)	Prove that the set of all elements of a group $(G,*)$ such that $a * x = x * a$ for every $x \in G$, is a subgroup of G.	7 Marks

UNIT-IV

7	a)	Prove by mathematical induction that $x - y$ is a factor of the polynomial $x^n - y^n$.	7 Marks
	b)	State and prove the principle of inclusion and exclusion for two sets.	7 Marks
		(OR)	
8	a)	Find the solution of $a_n - 4a_{n-1} - 12a_{n-2} = 0,\ n \geq 2,\ a_0 = 4; a_1 = \frac{16}{3}$ by the method of Characteristic roots.	7 Marks
	b)	Find the number of non-negative integral solutions of $\mathbf{x_1 + x_2 + x_3 + x_4 + x_5 = 30}$, where $\mathbf{x_1 \geq 2,\ x_2 \geq 3,\ x_3 \geq 4,\ x_4 \geq 2,\ x_5 \geq 0}$.	7 Marks

UNIT-V

9	a)	Show that the complete graph k_s is non planar.	7 Marks
	b)	Explain BFS Algorithm with example.	7 Marks
		(OR)	
10	a)	What is minimum spanning tree? Explain minimal spanning tree Algorithms with examples.	7 Marks
	b)	Find the Chromatic number of the $k_{3,3}$ and Wheel graph.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular Examinations May - 2016

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) If A, B, C are any three events in S, then prove that 8 Marks
$P(A\cup B\cup C)=P(A)+P(B)+P(C)-P(A\cap B)-P(B\cap C)-P(C\cap A)+P(A\cap B\cap C)$.

b) The probability density f(x) of a continuous random variable is given by 6 Marks
$f(x) = Ce^{-|x|}, -\infty < x < \infty$. Find C, mean and variance of the distribution. Also find the probability that the variate lies between 0 and 4.

(OR)

2 a) A hits target 3 times in 5 shots, B hits target 2 times in 5 shots, C hits target 3 times in 4 shots. Find the probability of the target being hit when all of them try. 7 Marks

b) State and prove Baye's theorem of probability. 7 Marks

UNIT-II

3 Prove that the mean of the Normal distribution is μ and variance is σ^2. 14 Marks

(OR)

4 a) A die is thrown 8 times. If getting a 2 or 4 is a success, find the probability of 7 Marks
i) 4 successes (ii) $P(X \le 3)$ (iii) $P(X \ge 2)$.

b) If a random variable has a Poisson distribution such that P(1) = P(2), find 7 Marks
i) mean of the distribution. ii) P(X = 4)
iii) p(X≥1) iv) P(1<X<4).

UNIT-III

5 a) Altoona Tire Company sells its ATC-50 tires with a 50,000-mile tread-life warranty. Loorie Ackerman, a quality control engineer with the company, runs simulated road tests to monitor the life of the output from the ATC-50 production process. From each of the last 10 batches of 1,000 tires, she has tested 5 tires and recorded the following results, with $\bar{X}$ and R measured in thousands of miles: 7 Marks

Batch	1	2	3	4	5	6	7	8	9	10
$\bar{X}$	50.5	49.7	50.0	50.7	50.7	50.6	49.8	51.1	50.2	50.4
R	1.1	1.6	1.8	0.1	0.9	2.1	0.3	0.8	2.3	1.3

i) Use the data above to help Lorrie construct a $\bar{X}$ chart.
ii) Is the production process in-control? Explain.

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) The number of defective washers in a workshop of 20 samples containing 2000 washers are 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 units for P-chart. 7 Marks

b) Calculate coefficient of correlation from the following data. 7 Marks

x	12	9	8	10	11	13	7
y	14	8	6	9	11	12	3

UNIT-IV

7 a) Explain the various steps involved in testing of hypothesis with examples. 7 Marks

b) In a sample of 500 people in Tamil Nadu 280 are tea drinkers and the rest are coffee drinkers. Can we assume that both coffee and tea are equally popular in this state at 1% level of significance? 7 Marks

(OR)

8 a) A population consists of 2, 3, 6, 8, 11. Consider all samples of size two, which can be drawn with replacement. Calculate 7 Marks

i) The population mean
ii) The population standard deviation
iii) The mean of the sampling distribution of means
iv) The standard error.

b) Write short notes on Type – I and Type – II errors. 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

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II B.Tech II Semester (SVEC14) Regular Examinations May - 2016

ENVIRONMENTAL SCIENCES

[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 briefly about the composition and structure of atmosphere.	7 Marks
	b)	Explain the role of individual in conservation of energy resources.	7 Marks
		(OR)	
2	a)	Give a detailed account on non renewable resources.	7 Marks
	b)	Explain the impacts of large dams on environment and mankind with case study.	7 Marks

UNIT-II

3	a)	Define ecology. Write about causes and management of resources.	7 Marks
	b)	Write about the energy flow in the ecosystem with examples.	7 Marks
		(OR)	
4	a)	Define biodiversity. Explain the concept of ecological succession.	7 Marks
	b)	Define endangered species. Explain hot spots of India.	7 Marks

UNIT-III

5	a)	Definition, causes, effects and control measures of water pollution.	7 Marks
	b)	Explain in detail about the management of floods.	7 Marks
		(OR)	
6	a)	Explain about the control measures of urban and industrial wastes.	7 Marks
	b)	Definition, causes, effects and control measures of soil pollution.	7 Marks

UNIT-IV

7	a)	Explain the concept of Environmental ethics.	8 Marks
	b)	Discuss the salient features of Forest conservation Act, 1986.	6 Marks
		(OR)	
8		Write note on the following:	
		i) Global warming	7 Marks
		ii) Ozone layer depletion	7 Marks

UNIT-V

9	a)	Discuss various women and child welfare programmes and their importance.	7 Marks
	b)	Explain the role of value education.	7 Marks
		(OR)	
10	a)	Write in detail about the population characteristics.	7 Marks
	b)	Discuss briefly about the environment and human health.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular Examinations May - 2016

BUSINESS COMMUNICATION AND PRESENTATION 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	Illustrate any two roles of a manager with special reference to interpersonal functions in a professional environment.	14 Marks
	(OR)	
2	Enumerate the barriers to effective communication and represent ways and means to overcome different barriers.	14 Marks

UNIT-II

3	Discuss the significance of Non-verbal communication while elucidating the statement 'Gestures are observed actions'.	14 Marks
	(OR)	
4	Discuss the Role of Communication in Crisis Management.	14 Marks

UNIT-III

5	How is written communication different from spoken communication?	14 Marks
	(OR)	
6	Write a business letter placing an order for computer peripherals with Translogic Inc. Assume relevant data.	14 Marks

UNIT-IV

7	What should the body of a business letter contain? Explain the format of a business letter in detail.	14 Marks
	(OR)	
8	What goes into a successful business presentation? How does one integrate technology into business presentation?	14 Marks

UNIT-V

9	'A résumé is a selective record of an individual's background'. Justify and present the components of a good résumé.	14 Marks
	(OR)	
10	Present an account of Do's and Don'ts of an interview.	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular Examinations May - 2016

PROFESSIONAL ETHICS

[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)	Compare general ethics and engineering ethics.	6 Marks
	b)	How do words the "job" and "occupation" different from "profession"?	8 Marks
		(OR)	
2	a)	What are the characteristics of a good engineer?	6 Marks
	b)	Explain how reasonable persons have reasonable disagreements on moral issues in engineering ethics.	8 Marks

UNIT-II

3	a)	What are the attributes of a profession?	6 Marks
	b)	What are the different criteria needed to be a professional engineer?	8 Marks
		(OR)	
4	a)	What are the "pleasures" offered by engineering?	6 Marks
	b)	What is meant by "virtues" related to engineering professionalism?	8 Marks

UNIT-III

5	a)	What are the conditions that are essential for a valid informed consent?	6 Marks
	b)	Draw a Fault Tree Diagram for an accident which involves a person falling out of a bus during an accident.	8 Marks
		(OR)	
6	a)	What are the limitations of "Code of ethics"?	6 Marks
	b)	How does the knowledge of uncertainties in design help the engineers to assess the risk of a product?	8 Marks

UNIT-IV

7	a)	What is discrimination? Give a suitable example that you are aware in a plant site?	6 Marks
	b)	Discuss the implications of whistle blowing with suitable examples you are aware in India / globally in recent times.	8 Marks
		(OR)	
8	a)	What is an IPR? How can they are protected with suitable examples?	6 Marks
	b)	Explain the concept of conflict of interest with suitable examples from consulting engineer's perspective.	8 Marks

UNIT-V

9	a)	Explain the role of engineers as consultant and expert witnesses.	6 Marks
	b)	Explain in detail about white collar crimes.	8 Marks
		(OR)	
10	a)	What is environmental ethics? Why it is important to study. Discuss any environmental issues in the ethical point of view to engineers.	8 Marks
	b)	Briefly discuss about the Intellectual Property Rights (IPR)	6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Regular Examinations May - 2016

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)	What is armature reaction? Why the armature reaction in DC machine is cross magnetizing?	7 Marks
	b)	Explain the speed control of DC shunt motor.	7 Marks
		(OR)	
2	a)	Explain the significance of the critical field resistance of a DC shunt generator.	7 Marks
	b)	A DC shunt motor operating at 300 V has a no-load speed of 1200 r.p.m. The motor is now reconnected to 600 V mains and draws an armature current of 150A. Calculate the motor speed. Assume linear magnetization characteristic. Given R_a= 0.2Ω.	7 Marks

UNIT-II

3	a)	Enumerate and explain briefly different types of windings in a transformer.	6 Marks
	b)	A single phase transformer is connected to a 230V, 50 Hz supply. The net cross sectional area of the core is 60 cm^2. The number of turns in the primary is 500 and in the secondary 100. Determine: i) Transformation ratio. ii) EMF induced in secondary winding iii) Maximum value of flux density in the core.	8 Marks
		(OR)	
4	a)	Explain the procedure for performing the open circuit test on a transformer.	7 Marks
	b)	A 230 V, 3KVA single phase transformer has an iron loss of 100 W at 40 Hz and 70W at 30 Hz. Find the hysteresis and eddy current losses at 50 Hz.	7 Marks

UNIT-III

5	a)	Explain the measurement of power using the two wattmeter method.	7 Marks
	b)	A balanced star-connected load of 2.5 Ω resistance and 0.03 H inductance in series in each phase is connected across a 415V, three phase, 50Hz supply. Calculate the line current, power input, kVA and kVAR taken by the load.	7 Marks
		(OR)	
6	a)	Derive the relation between line and phase quantities of voltages and currents for a star connected system.	7 Marks
	b)	Three impedances $Z_1 = 10\angle 0^0\Omega$, $Z_2 = 10\angle 26.8^0\Omega$, $Z_3 = 10\angle -26.8^0\Omega$ are connected to a three-phase, four wire star connection and the supply is 440V. Find the line currents, neutral currents and total power.	7 Marks

UNIT-IV

7	a)	Define synchronous speed and slip.	7 Marks
	b)	Explain the principle of operation of Induction Motor.	7 Marks
		(OR)	

8	a)	Explain the principle of operation of an alternator.	7 Marks
	b)	A 6 pole, 50Hz, squirrel cage induction motor runs on no-load at 975 r.p.m. Calculate the percentage slip and frequency of the rotor current.	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 teeth stepper motor.	4 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular Examinations May - 2016

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

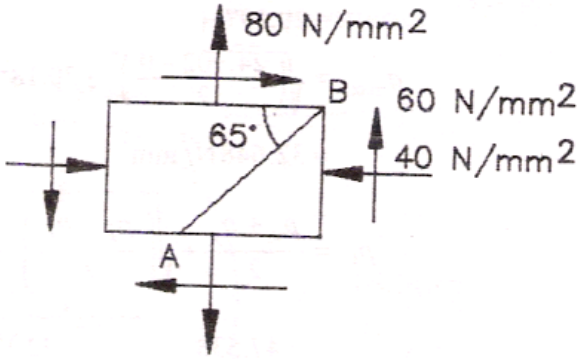

Fig.1

UNIT-II

3 Find the expressions for slope and deflection of a cantilever of length 'L' and uniform 'EI', carrying a u.d.l of intensity 'w' per unit length acting over the entire span. Hence find its maximum slope and deflection. 14 Marks

(OR)

4 A simply supported rectangular R.C beam is of length 3 m and cross section 100 mm **x** 200 mm. It carries a point load of 20 kN at a distance of 1 m from the left support. Find the maximum slope and maximum deflection under the point load. Take E = $1\mathbf{x}10^4$ N/mm^2. 14 Marks

UNIT-III

5 What are the assumptions made in the Euler's theory? Derive the critical load formula for a long column with one end fixed and the other hinged. 14 Marks

(OR)

6 A hollow cylindrical cast iron column of 150 mm external diameter and 15 mm thickness, 3.6m length is hinged at one end and fixed at the other. Find 14 Marks

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 = $8.4\mathbf{x}10^4$ N/mm^2, f_c = 525 N/mm^2 and α = 1/1600.

UNIT-IV

7 A cantilever of span 4 m is supported at the free end to the level of fixed end. It 14 Marks

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.

(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) Derive an expression for the distortion energy per unit volume when a body is subjected to principal stresses σ_1, σ_2 and σ_3. 7 Marks

b) The principal stresses at a point in an elastic material are 200 N/mm^2 (tensile), 100 N/mm^2 (tensile) and 50 N/mm^2 (compressive).If the stress at the elastic limit in simple tension is 200 N/mm^2, determine whether the failure of the material will occur according to maximum principal strain theory. Take Poisson's ratio as 0.3. 7 Marks

(OR)

10 A 60 mm **x** 40 mm **x** 6 mm unequal angle is placed with the longer leg vertical and is used as a beam. It is subjected to a B.M of 12 kN.m acting in the vertical plane passing through the centroid of the section. Determine the maximum bending stress induced in the section. 14 Marks

CODE No.:14BT40102 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Regular Examinations May - 2016

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 Explain the following types of foundations from ground level to foundation level, with neat sketches: 14 Marks

i) Reinforced concrete strip footing and load-bearing wall
ii) RC column footing for framed building
iii) Raft foundation with columns
iv) Pile foundation on columns

(OR)

2 What do you mean by the following terms? 14 Marks

i) Spandril ii) Balustrade iii) Battens
iv) Soffit v) Gable vi) Cleats vii) Eaves Board

UNIT-II

3 Discuss about shoring methods in detail. 14 Marks

(OR)

4 Write short notes on white washing and distempering. 14 Marks

UNIT-III

5 a) Write down the safety measures to be followed in construction of industrial structures. 7 Marks

b) Mention the features of Workmen's Compensation Act of 1923 and subsequent amendments. 7 Marks

(OR)

6 a) What are the objectives of material management? Give the functions of material management departments. 7 Marks

b) Describe various types of hoisting equipment employed in construction projects. 7 Marks

UNIT-IV

7 Discuss in brief the role of management in project execution. 14 Marks

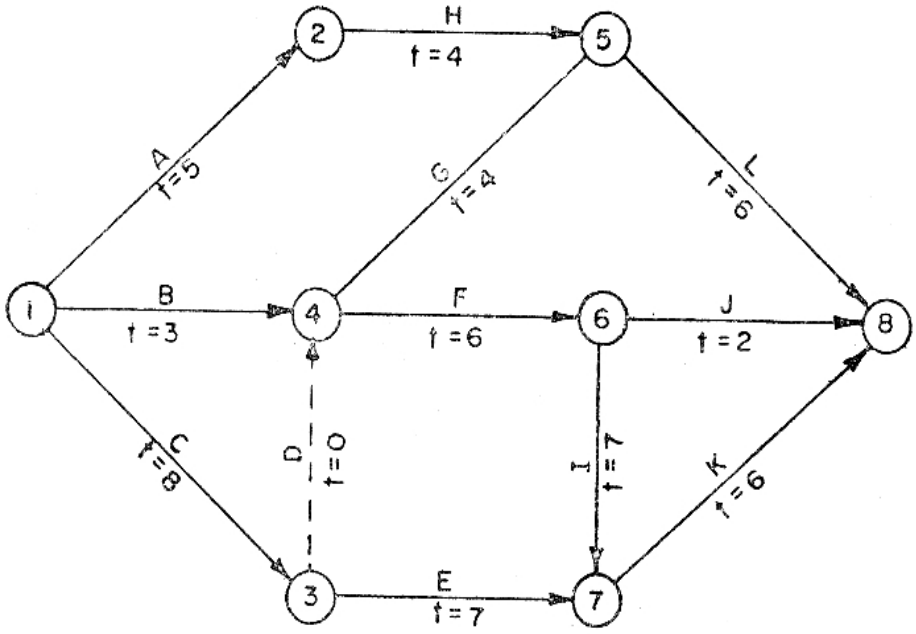
(OR)

8 Define an event and activity. Differentiate clearly between the two. 14 Marks

UNIT-V

9 The network of a certain project is shown in figure, with the estimated durations of various activities. Determine the following: 14 Marks

i) Earliest event time and latest event time
ii) Earliest and latest start and finish times of each activity
iii) Total and free floats for each activity
iv) Critical path for the network



(OR)

10 a) Explain the determination of the probability of meeting the scheduled date of completion of a project. 5 Marks

b) If the expected time along the critical path of a project is 27 weeks and the standard deviation along it is 6 weeks, determine the probability of completing the project with in 5 Marks

(i) 21 weeks (ii) 24 weeks (iii) 36 weeks

c) On a network, calculations yield a project length of 60 days with a variance of 9 days. Estimate the number of days required to complete the project with a probability of 98%. 4 Marks

CODE No.:14BT40103 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular Examinations May - 2016

SURVEYING

[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 differentiate Ranging and Taping. 7 Marks

b) A steel tape 20 m long standardized at 55^0F with a pull of 10 kg was used for measuring a base line. Find the correction per tape length, if the temperature at the time of measurement was 80^0F and the pull exerted was 16 kg. Weight of 1 cubic cm of steel = 7.86 g. Weight of tape = 0.8 kg and E = 2.109 x 10^6 kg/cm². Coefficient of expansion of tape per 1^0F = 6.2 x 10^{-6}. 7 Marks

(OR)

2 a) Explain various methods for determining area of a surface of land. Describe their merits and demerits. 7 Marks

b) The following offsets were taken from a chain line to a hedge. 7 Marks

Distance (m)	0	20	40	60	80	120	160	220	280
Offset (m)	8.4	11.8	13.6	10.2	9.4	19.8	17.5	16.3	14.6

Compute the area between the chain line, hedge and end offsets by Simpson's rule.

UNIT-II

3 a) Explain clearly the points of difference between the prismatic compass and the surveyors compass. 6 Marks

b) Convert the following whole circle bearings to quadrantal bearings. 8 Marks
(i) 42°30′ : (ii) 126°15′ : (iii) 242°45′ : (iv) 328°10′

(OR)

4 a) Describe the methods of reduction of levels and state their merits and demerits. 7 Marks

b) A level is set up at a station O, and the reading on the staff when held at A 800 m away from O, is 1.595 and when held at B 1200 m away it is 2.984. Determine the true difference in elevation between A and B. 7 Marks

UNIT-III

5 a) Describe various methods of traversing with the theodolite. 7 Marks

b) The back angles of part of a open traverse: At station: B, 202°38′ : C, 169°15′; D, 158°36′ ; E , 188°12′. If the true forward bearing of AB is 36°26′, find the true bearings of the remaining sides. 7 Marks

(OR)

6 Explain the uses of micro optic theodolites. 14 Marks

UNIT-IV

7 a) What are the various methods employed in tacheometric survey? Explain the method most commonly used. 7 Marks

b) To determine the gradient between two points A and B, a tacheometer was set up at another station C and the following observations were taken, keeping the staff vertical. 7 Marks

Staff at	Vertical angle	Stadia readings
A	+5010'	1.30, 1.61, 1.92
B	-3020'	2.15, 2.46, 2.77

The horizontal angle ACB is $70^0 15'$. K = 100; C = 0
Determine the gradient between A and B.

(OR)

8 a) Define the following terms related to curve setting 7 Marks
i) Point of curve and point of tangency ii) External distance
iii) Degree of curve iv) Deflection angle

b) A circular curve has to pass through a point P at 15 m from the point of intersection and equidistant from the tangents. If the chainage of point of intersection is 3540.00 m and the intersection angle is 28^0. Calculate the radius of curve and the chainage of the tangent points. 7 Marks

UNIT-V

9 Explain the principle of phase comparison in detail. 14 Marks

(OR)

10 Explain the following. 14 Marks
i) Errors in Electronic measurement.
ii) Corrections to electromagnetic distance measurements.

CODE No.:14BT40104 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Regular Examinations May - 2016

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	Explain the growth of boundary layer along a thin flat plate. What is control of boundary layer? Explain.	14 Marks
	(OR)	
2	What do you understand by: Total drag on a body, Co-efficient of drag and Co-efficient of lift and a man weighing 90 kgf descends to the ground from an aeroplane with the help of a parachute against the resistance of air? The velocity with which the parachute, which is hemispherical in shape, comes down is 20 m/s. Find the diameter of the parachute. Assume C_D = 0.5 and density of air = 1.25 kg/m^3.	14 Marks

UNIT-II

3	Derive an expression for the discharge through a channel by Chezy's formula and a trapezoidal channel has side slopes of 1 horizontal to 2 vertical and the slope of the bed is 1 in 1500. The area of the section is 40 m^2. Find the dimensions of the section if it is most economical. Determine the discharge of the most economical section if C = 50.	14 Marks
	(OR)	
4	Derive an expression for critical depth and critical velocity and sluice gate discharges water into a horizontal rectangular channel with a velocity of 10 m/s and depth of flow of 1m. Determine the depth of flow after the jump and consequent loss in total head.	14 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 50 mm moving with a velocity of 40 m/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 15 m/s strikes a curved vane which is moving with a velocity of 5 m/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 6 m. The guide blades are inclined at 30° to the tangent at periphery and the runner vanes make 110° 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

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular Examinations May - 2016

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 causal, linear, stable: 7 Marks

(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 causal 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 $x(t) = \cos \omega_0 t$ at 1 ms intervals, i.e., $\cos(\omega_0 nT) = (-1)^n$, $T=10^{-3}$ s . Determine three distinct possible values of ω_0. 7 Marks

UNIT-II

3 a) Design a m-derived low pass filter having a design resistance $R_0=500\Omega$,cut-off frequency $f_c=1500$Hz and infinite attenuation frequency $f_\infty=2000$Hz. 7 Marks

b) Write short notes on: 7 Marks
i) Cut-off frequency
ii) Image impedance of a filter network
iii) Composite filters

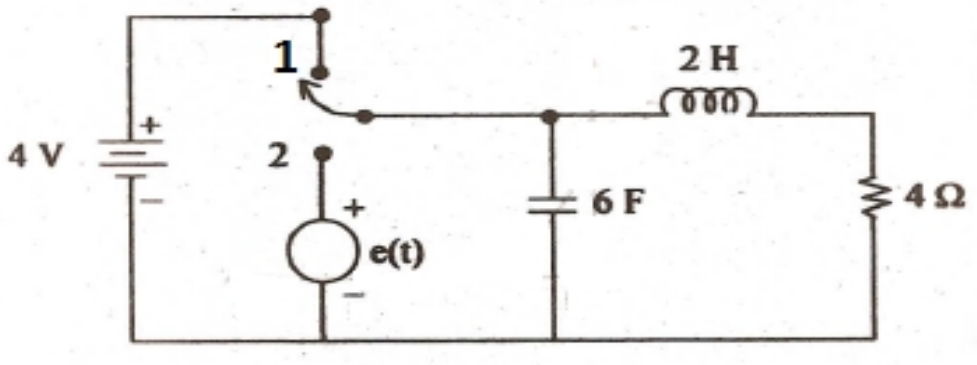
(OR)

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

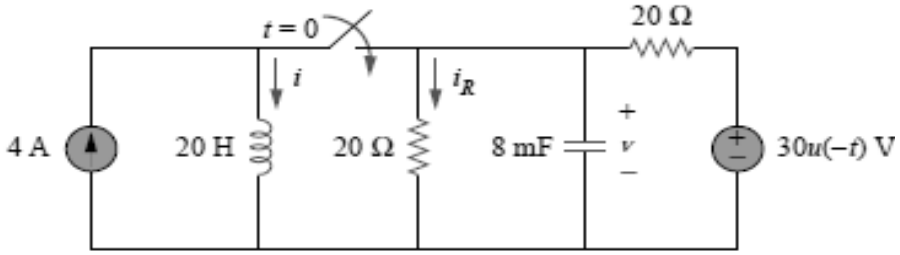
b) Discuss disadvantages of K type filters. How these can be overcome using m-derived section. 5 Marks

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 steady 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) The y-parameters for certain two port network are $\mathbf{y_{11}=2, y_{12}=-0.2, y_{21}=20}$ and $\mathbf{y_{22}=0.1}$, all in **m℧**. A source having an internal resistance of 500 Ω is connected the input and **2.5 kΩ** resistor is at the output. Calculate: 8 Marks

i) $\mathbf{G_v}$ ii) $\mathbf{G_I}$ iii) $\mathbf{G_p}$

b) Given the z parameters for a bilateral two port $\mathbf{z_{11}=8\Omega, z_{21}=5\Omega, z_{22}=4\Omega}$. Find the four hybrid parameters. 6 Marks

(OR)

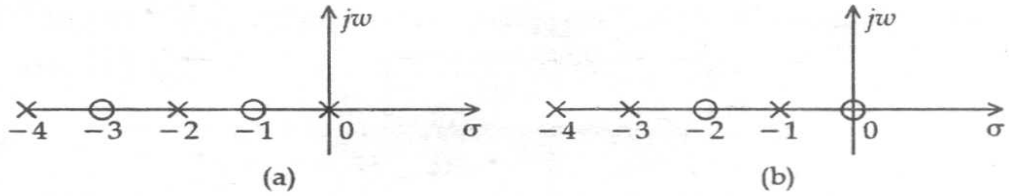
8 Find four ***h*** parameters of these resistive two ports: 14 Marks

(i) a resistor *R* connected from the upper input terminal to the upper output terminal and a short circuit between the lower terminals.

(ii) a short circuit between upper terminals, a short circuit between the lower terminals, and a resistor R between input terminals.

UNIT-V

9 a) Of the two pole-zero diagrams shown in figure, pick the diagram that represents an RL impedance function and synthesize by first foster form. 7 Marks



b) Write the conditions for a driving point function to be positive real. Determine whether the function $Z(s) = \dfrac{2s^2 + 5}{s(s^2 + 4)}$ is positive real or not. 7 Marks

(OR)

10 a) Define positive real function and mention its properties. Also write the properties of RL, RC driving point functions. 7 Marks

b) Synthesize the foster I and II forms of realization of the following driving point function $Z_0(s) = \dfrac{2s^2 + 12s + 16}{s^2 + 4s + 3}$. 7 Marks

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CODE No.:14BT40202 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular Examinations May - 2016

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)	What are the advantages and disadvantages of pumped storage hydro power plant?	7 Marks
	b)	Explain the functions of the fallowing: i) Dam ii) Spillways iii) Surge tank iv) Draft tube	7 Marks

(OR)

2	a)	Discuss various factors which affect the location of a hydropower station.	7 Marks
	b)	Explain in detail about working principle of Kaplan turbine.	7 Marks

UNIT-II

3	a)	What do you mean by draught? What is its function in a thermal power plant? Explain different types of draught employed in a thermal power plant.	7 Marks
	b)	Write a short note on feed water treatment in a thermal power plant.	7 Marks

(OR)

4	a)	Explain the purpose and functioning of condenser and cooling tower in a steam power plant.	7 Marks
	b)	What is the fundamental difference between the operation of impulse and reaction turbines? Explain the same with neat sketches.	7 Marks

UNIT-III

5	a)	What is a chain reaction? How it can be controlled?	6 Marks
	b)	What is a nuclear reactor and describe the various parts of a nuclear reactor?	8 Marks

(OR)

6	a)	Give the advantages and draw backs of combined operation of different power plants.	7 Marks
	b)	Discuss about the coordination of hydro-electric plant with ample storage combination with steam plants.	7 Marks

UNIT-IV

7		With a neat sketch, explain the layout of a Diesel Engine Power Plant. Explain its advantages and disadvantages as compared to a Steam Power Plant.	14 Marks

(OR)

8	a)	Explain about the energy cycle of a simple gas turbine.	7 Marks
	b)	Write a short note on Biomass Power Plant.	7 Marks

UNIT-V

9 a) What are the load curves and load duration curves? Discuss their utility in the economics of generation. 7 Marks

b) Calculate the generating cost per KWH, delivered from a generating station from the following data. 7 Marks

Plant capacity 500 MW; annual load factor 45 % ; capital cost Rs.1200×106; annual cost of fuel etc Rs.160 × 106; interest 9.2 % per annum of initial value.

(OR)

10 a) What is block rate tariff? Explain the disadvantages of flat rate tariff. 7 Marks

b) The monthly readings of a consumer's meter are as follows : 7 Marks

Maximum demand=50 KW; Energy consumed = 36,000 KWH;
Reactive energy = 23,400 KVAR.
If the tariff is Rs 80 per KW of maximum demand plus 8 paise per unit plus 0·5 paise per unit for each 1% of power factor below 86%, calculate the monthly bill of the consumer.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Regular Examinations May - 2016

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)	What are the sources of errors and how to rectify them?	7 Marks
	b)	The Guaranteed accuracy of a flow meter working on thermal principles is ± 3% of full scale reading of $2.5 \times 10^{-6} m^3$/sec. If the flow measured by the meter is $1.25 \times 10^{-6} m^3$/sec, calculate the limiting error in %.	7 Marks

(OR)

2	a)	What are static characteristics and how do they differ from dynamic characteristics?	7 Marks
	b)	Explain the construction and working of PMMC type instruments.	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		An electrodynamometer wattmeter is use for measurement of power in single phase circuit. The load voltage is 100 V and the load current is 9 A at lagging power factor of 0.1.The wattmeter voltage circuit has resistance of 3000 Ω and an inductance of 30 mH. 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 0.1 Ω and negligible inductance. The frequency is 50 Hz.	14 Marks

UNIT-III

5	a)	Explain construction and working principle of current transformer.	7 Marks
	b)	A 1000/5 A, 50 Hz current transformer has a secondary burden comprising a non inductive impedance of 1.6 Ω. The primary winding has one turn. Calculate flux in the core and ratio error at full load. Neglect leakage reactance and assume the iron loss in the core to be 1.5 W at full load. The magnetizing mmf is 100A.	7 Marks

(OR)

6	a)	Explain construction and working principle of potential transformer.	7 Marks
	b)	A potential transformer, ratio 1000/100 volt, has the following constants: Primary resistance=94.5Ω, Secondary resistance = 0.86Ω, Primary reactance=66.2Ω, Total equivalent reactance = 110Ω, No load current = 0.02A at 0.4 power factor, Calculate: i) Phase angle error at no load; ii) Burden in VA at unity power factor at which the phase angle will be zero.	7 Marks

UNIT-IV

7	a)	Derive the balancing condition and dissipation factor for Schering bridge.	7 Marks
	b)	The Schering bridge has the following constants Arm AB - Capacitor of 0.5 μF	7 Marks

in parallel with 1KΩ resistance. Arm AD -resistance of 2KΩ, .Arm BC- capacitor of 0.5μF, .Arm CD- unknown capacitor C_x and R_x in series, Frequency - 1KHz. Determine the unknown capacitance and dissipation factor.

(OR)

8 a) Explain the suitable bridge used for the measurement of high resistance. 7 Marks

b) Write a short notes on Megger and Q-meter. 7 Marks

UNIT-V

9 a) Explain the principle of electrostatic focusing in a CRO. 7 Marks

b) The X- deflection plate in a CRO are 15 mm long and 6 mm apart. The centre of the plates is 20 cm from the screen. The accelerating voltage is 2.5 kV. Determine the deflection sensitivity and deflection factor of the cathode ray tube. 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

CODE No.:14BT40204 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Regular Examinations May - 2016

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, 50 Hz, 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)	Draw the vector diagrams of transformer at load with lagging and leading power factors.	6 Marks
	b)	Calculate the voltage regulation for a 200/400 V, 4 KVA transformer at full load and p.f. 0.8 lagging with following test data: OC test: 200 V, 0.8 A, 70 W (LV side) SC test: 20 V, 10 A, 60 W (HV side)	8 Marks

(OR)

4		A 20 KVA, 2300/230 V, two winding transformer is to be used as an auto transformer, with constant source voltage of 2300 V. At full load of unity power factor, calculate the power output, power transformed and conducted. If the efficiency of the two winding transformer at 0.6 p.f. is 96%, find the autotransformer efficiency at the same power factor.	14 Marks

UNIT-III

5	a)	What are the disadvantages of current and voltage harmonics in transformers? Explain how these harmonics can be eliminated.	7 Marks
	b)	Two single phase furnaces are supplied at 250 V from a 6.6 KV, 3-f system through a pair of Scott connected transformer, if the load on the main transformer is 85 KW at 0.9 p.f. lagging and that on the teaser transformer is 69 KW at 0.8 p.f lagging. Find the values of line currents on the three phase side. Neglect the losses.	7 Marks

(OR)

6	a)	With neat phasor diagram, explain the voltage regulation of 3-phase transformer.	7 Marks
	b)	An ideal 3-φ step down transformer connected in delta/star delivers power to a balanced 3-φ load of 120 KVA at 0.8 pf. The input line voltage is 11 KV and the turn's ratio of transformer (phase to phase) is 10. Determine the line voltage, line currents, phase voltages, phase currents on both primary and secondary sides.	7 Marks

UNIT-IV

7 a) Explain the principle of operation of 3-phase induction motor. 7 Marks

b) A 3-phase induction motor is wound for 4-poles and is supplied from 50 Hz system. Calculate; 7 Marks

i) the synchronous speed.

ii) the rotor speed when slip is 4% .

iii) rotor frequency when rotor runs at 600 r.p.m.

(OR)

8 a) Derive the torque equation of 3-phase induction motor. 6 Marks

b) Calculate the torque exerted by 8 pole, 50Hz, 3-phase induction motor operating with a 4% slip which develops a maximum torque of 150 kg-m at a speed of 600 r.p.m. The resistance per phase of the rotor is 0.5Ω. 8 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

CODE No.:14BT40301 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular Examinations May - 2016

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 kinematic pair. How kinematic pairs are classified? Explain with neat sketches. 8 Marks

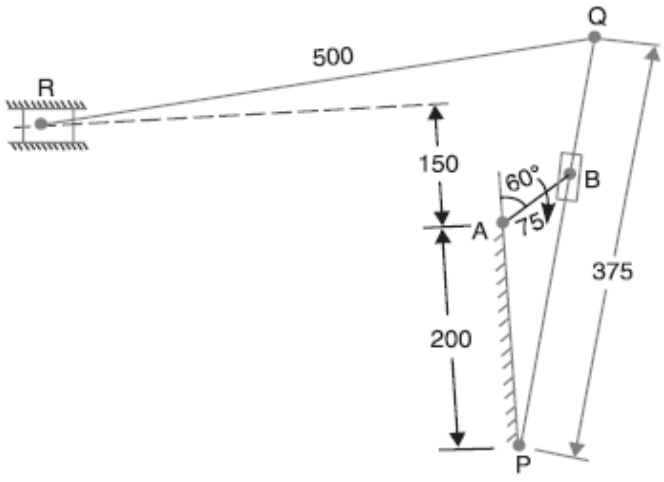
b) Differentiate between 6 Marks
i) Binary joint and binary link
ii) Mechanism and machine
iii) Completely constrained motion and incompletely constrained motion

(OR)

2 What do you mean by inversion of a mechanism? Explain with sketches all inversions of double slider crank chain. 14 Marks

UNIT-II

3 The driving crank AB of the quick-return mechanism, as shown in Fig.1, revolves at a uniform speed of 200 r.p.m. Find the velocity and acceleration of the tool-box R, in the position shown, when the crank makes an angle of 60° with the vertical line of centres PA. What is the acceleration of sliding of the block at B along the slotted lever PQ? 14 Marks



All dimensions in mm.

Fig. 1

(OR)

4 The lengths of various links of a mechanism, as shown in Fig.2 are: OA = 0.3 m ; AB = 1 m ; CD = 0.8 m ; and AC = CB. Determine, for the given configuration, the velocity of the slider D if the crank OA rotates at 60 r.p.m. in the clockwise direction. Also find the angular velocity of the link CD. Use instantaneous centre method. 14 Marks

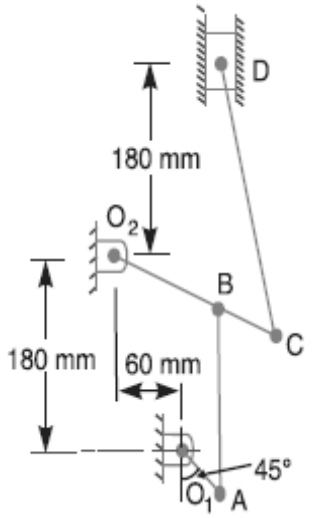


Fig. 2

UNIT-III

5 a) Describe Hart's mechanism with a neat sketch and prove that the tracing point describes a straight line path. 7 Marks

b) How can we ensure that a Tchebicheff mechanism traces an approximate straight line? 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 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 60^0 of can rotation

iii) Follower to return to its initial position during 90^0 of cam rotation

iv) Follower to dwell for the remaining 90^0 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 = 48^0, Angle of dwell between ascent and descent = 42^0, Angle of descent = 60^0, the lift of follower = 40 mm, diameter of roller 20mm, distance between line of action of follower and axis of cam = 20 mm. 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 Two mating spur gear with module pitch of 6.5 mm have 19 and 47 teeth of 20^o pressure angle and 6.5 mm addendum. Determine the number of pairs of teeth in contact and the angle turned through by the larger wheel for one pair of teeth in contact. Determine also the sliding velocity at the instant; 14 Marks

(i) engagement commences,
(ii) the engagement terminates,
(iii) at the pitch point. When the pitch line velocity is 1.2 m/s

(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) Regular Examinations May - 2016

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 The velocity distribution of flow over a plate is parabolic with vertex 30 cm from the plate, where the velocity is 180 cm/s. If the viscosity of the fluid is 0.9 N-s/m^2, find the velocity gradients and shear stresses of 0, 15 cm and 30 cm from the plate. 14 Marks

(OR)

2 A cylinder tank of cross –sectional area 600 mm^2 and 2.6 m height is filled with water upto height of 1.5 m and remaining with oil of specific gravity 0.78. The vessel is open to atmosphere. Calculate; 14 Marks

i) Intensity of pressure at interface.

ii) Absolute and gauge pressures on the base of the tank in terms of water head, oil head and N/m^2.

iii) The net force experienced by the base of the tank.

Assume atmospheric pressure as 1.0132 bar.

UNIT-II

3 a) Define steady, unsteady, uniform, non uniform, rotational and irrotational flows. 7 Marks

b) A conical pipe diverges uniformly from 100 mm to 200 m diameter over a length of 1 m. Determine the local and convective acceleration at the mid-section assuming 7 Marks

i) rate of flow is 0.12 m^3/s and it remains constant

ii) rate of flow varies uniformly from 0.12 m^3/s to 0.24m^3/s in 5 sec at t= 2 sec.

(OR)

4 A 300 mm x 150 mm venturimeter is provided in a vertical pipeline carrying oil of SG 0.9 flow being upward. The difference in elevation of the throat section and entrance section of the venturimeter is 300 mm. The differential U-tube mercury manometer shows a gauge deflection of 250 mm. Calculate; 14 Marks

i) the discharge of oil.

ii) the pressure difference between the entrance and throat section.

Take C_d= 0.98.

UNIT-III

5 Three pipes of 300 mm, 200 mm and 400 mm diameters have lengths of 450 m, 255 m and 315 m respectively. They are connected in series to make a compound pipe. The ends of this compound pipe are connected with two tanks whose difference of water levels is 18 m. If the coefficient of friction for the pipes are 0.0075, 0.0078 and 0.0072 respectively, determine the discharge through the compound pipe considering minor losses and neglecting minor losses. 14 Marks

(OR)

6		A jet of water moving at 12 m/s impinges on vane shaped to deflect the jet through 120^0 when stationary. If the vane is moving at 5 m/s, find the angle of the jet so that there is no shock at inlet. Draw the inlet and outlet velocity triangle and determine the absolute velocity of the jet at exit in magnitude and also find work done per second per unit weight of water striking per second. Assume that the vane is smooth.	14 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 120 m. Its diameter at inlet is 1.2 m and the flow area is 0.4 m^2 .The angle made by absolute and relative velocities at inlet are 200 and 600 respectively with the tangential velocity. Determine; i) the volume flow rate. ii) the power developed . iii) the 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

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II B.Tech II Semester (SVEC14) Regular Examinations May - 2016

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: i) mean effective pressure ii) specific output iii) specific fuel consumption iv) calorific value of fuel	7 Marks
	b)	What is dissociation and what is its effect on the temperature of exhaust gas mixtures?	7 Marks

UNIT-II

3	a)	Briefly explain the difference between the homogeneous and heterogeneous combustion. Explain the various factors that influence the flame speed in case of homogeneous combustion.	7 Marks
	b)	Explain the phenomenon of knock in CI engines and compare it with SI engine knock.	7 Marks
		(OR)	
4	a)	Explain with figures the various types of combustion chambers used in CI engines.	7 Marks
	b)	What is delay period and explain the types in it. Also establish the factors that affect the delay period.	7 Marks

UNIT-III

5		A four-stroke cycle gas engine has a bore of 20 cm and a stroke of 40 cm. 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 12 kJ/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)	Give the comparison of various methods used to find friction power.	7 Marks
	b)	Name different methods of measurement of air consumption in an engine and explain any one of them in detail.	7 Marks

UNIT-IV

7	a)	Explain briefly the working principles of i) Stirling engine ii) Stratified charge engine.	7 Marks
	b)	Discuss the advantages and disadvantage of duel fuel engines.	7 Marks
		(OR)	
8	a)	What are the advantages of HCCI engines over conventional engines? Discuss.	7 Marks
	b)	Where do you employ lean burn engines? Explain how they are different from normal engines.	7 Marks

UNIT-V

9 A single stage single acting air compressor has a bore of 200 mm and a stroke of 300 mm. It runs at a speed of 500 rev/min., the clearance volume is 5% of the swept volume and the polytropic index is 1.3 throughout. Intake pressure and temperature are 97kN/m^2 and 20^{o}C respectively and the compression pressure is 550kN/m^2. 14 Marks

Determine:

i) the volumetric efficiency ii) air delivery temperature

iii) cycle power iv) isothermal efficiency neglecting clearance

(OR)

10 A two stage single acting compressor with complete inter cooling delivers 10 kg/min of air at 16 bar. The suction occurs at 1 bar and 15°C. The expansion and compression process are reversible polytropic with polytropic index n=1.25. Calculate: 14 Marks

i) Power required ii) The free air delivered

iii) The isothermal efficiency iv) Heat transfer in intercooler

If the clearance ratios for LP and HP cylinders are 0.04 and 0.06 respectively, calculate the swept and clearance volumes for each cylinder. The speed of the compressor is 400 r.p.m.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Regular Examinations May - 2016

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 rolling and drawing of wire operations with neat sketches.	7 Marks
	b)	Describe different types of forging processes.	7 Marks
		(OR)	
2	a)	Distinguish between hot working and cold working of metals.	7 Marks
	b)	Differentiate between direct extrusion and indirect extrusion.	7 Marks

UNIT-II

3	a)	Briefly explain: i) Blanking ii) Piercing iii) Trimming iv) Nibbling	7 Marks
	b)	What are the criteria which regulate the draw die radius and punch radius in deep drawing operation.	7 Marks
		(OR)	
4	a)	In die shearing operation die size is the hole size and punch size is the blank size. Explain the validity of above statement with supporting reasons.	7 Marks
	b)	Discuss the factors to be considered for selecting a suitable press for a given job. Describe the working of a hydraulic press with a simple sketch.	7 Marks

UNIT-III

5	a)	Discuss the important characteristics of plastics. Explain the transfer moulding process with sketches.	7 Marks
	b)	Explain the injection moulding process with suitable sketches stating the specific applications.	7 Marks
		(OR)	
6	a)	Distinguish between thermoplastic and thermosetting plastics. List the advantages and applications of plastics.	7 Marks
	b)	Name and describe the process that is used for making plastic bottles.	7 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)	Explain the characteristics of various etchants used in chemical machining.	7 Marks
	b)	What are the different elements of the ECM process? Explain them.	7 Marks
		(OR)	
10	a)	Discuss the parameters, which influence the selection of tool materials for	7 Marks

machining w/p materials in E.D.M.

b) Describe Electric Discharge Grinding process with neat sketch. 7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Regular Examinations May - 2016

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

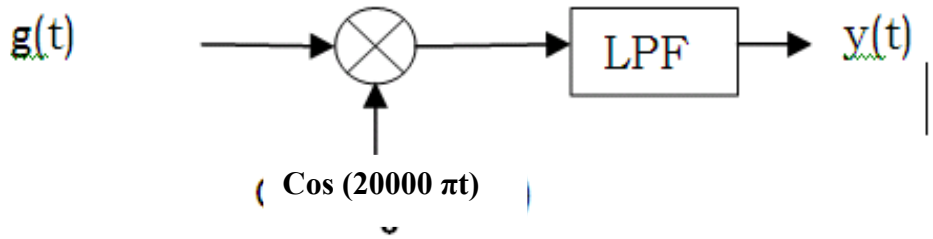
1	a)	Explain generation of AM signal using Square law modulator. Derive formula for modulation index.	8 Marks
	b)	An AM modulator has the output s(t) = A cos380πt + B cos360πt + B cos400πt. The carrier power is 200W and the efficiency of transmission is 20%. Determine A, B and the modulation index.	6 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 equation for time domain representation of SSB signal.	7 Marks
	b)	Let x(t) be a signal band limited to 1KHz. SSB modulation is performed to produce SSB signal g(t) with carrier signal of Sin(20000πt). Ideal LPF with Cut off frequency is 1KHz. If the proposed demodulation technique is used as the following, then obtain then obtain y(t):	7 Marks



(OR)

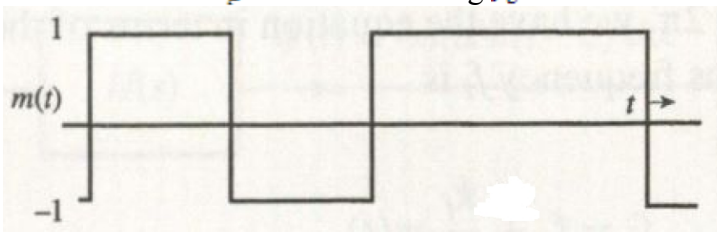
4	a)	Show that Hilbert transform of Hilbert transformed signal g(t) is -g(t).	7 Marks
	b)	Describe with necessary block diagram the generation of SSB signals using phase shift method.	7 Marks

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)	Discuss the various classifications of transmitters.	7 Marks
	b)	In a broadcast super heterodyne receiver having no RF amplifier. The loaded Q of the antenna coupling circuit is 100. If the intermediate frequency is 455KHz. Calculate the image frequency and its rejection ratio at 1000KHz.	7 Marks

(OR)

8	a)	Derive an expression for the figure of merit of a single tone AM receiver employing envelope detector.	8 Marks
	b)	Discuss the threshold effect and capture effects in FM.	6 Marks

UNIT-V

9	a)	Draw the wave forms of PAM, PPM and PWM signals for sinusoidal modulating signal.	6 Marks
	b)	With neat block diagrams, explain the generation and detection of PPM signals.	8 Marks

(OR)

10	a)	Explain the generation and detection of PWM signals with neat schematics.	8 Marks
	b)	Illustrate FDM multiplexing scheme with neat sketch.	6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Regular Examinations May - 2016

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)	Give a circuit diagram of a two-stage transistorized RC coupled amplifier. Also draw the frequency response of the amplifier.	8 Marks
	b)	Explain, how the characteristics are to be modified with transformer coupling	6 Marks
		(OR)	
2	a)	Define (i) Cascade amplifier (ii) Darlington pair (iii) Transformer coupling (iv) Impedance coupling	8 Marks
	b)	Draw the circuit diagram of a RC coupled amplifier using PNP transistor.	6 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)	Explain why RC Oscillators are preferred for low frequencies? Draw a neat circuit diagram of Phase Shift Oscillator using BJT and derive the expression for minimum $\mathbf{h_{fe}}$ required to sustain oscillations.	11 Marks
	b)	Give the classification of oscillators.	3 Marks
		(OR)	
6	a)	Draw the circuit diagram of a current series feedback and derive expressions for output resistance and input resistance.	7 Marks
	b)	Show that Voltage shunt feedback amplifier trans resistance gain, R_i, R_0 are decreased by a factor $(1+A\beta)$ with feedback.	7 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: (i) Thermal stability and heat sinks (ii) Transistor power consumption (iii) Distortion in power amplifiers.	14 Marks

UNIT-V

9	a)	Explain the working of a single-tuned amplifier.	6 Marks
	b)	Derive an expression for the resonance frequency of a parallel resonant circuit	8 Marks
		(OR)	
10	a)	Explain in brief, the advantage in using double-tuned circuit over the single-tuned.	8 Marks
	b)	A tuned circuit has resonance frequency of 800 KHz and a band width of 10 KHz. What is the value of its Q-factor?	6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Regular Examinations May - 2016

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)	State and explain Biot-Savart's law.	7 Marks
	b)	Derive expression for magnetic field intensity at any point on the axis of circular coil carrying current.	7 Marks
		(OR)	
4	a)	Explain about the magnetic vector potential and derive its expression.	7 Marks
	b)	State and explain Ampere's circuital law with applications.	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 how the concept of displacement current was introduced by Maxwell to account for the production of magnetic fields in the empty space.	7 Marks
	b)	Prove that under the condition of no reflection at an interface, the sum of the Brewster angle and the angle of refraction is 90 degrees for parallel polarization for the case of reflection by a perfect conductor under oblique incidence, with neat sketches.	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/m^2. Find the average energy density.	7 Marks
	b)	Explain the significances of Poynting theorem and Poynting vector.	7 Marks

UNIT-V

9	a)	Define following terms and explain their physical significance. i) Attenuation constant ii) Characteristics impedance iii) Phase constant iv) Velocity	7 Marks
	b)	At 8 MHz the characteristic impedance of transmission line is (40-j2) and the propagation constant is (0.01 + j0.18) per meter. Find the primary constants.	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

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II B.Tech II Semester (SVEC14) Regular Examinations May - 2016

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) $x(t) = t\,[u(t) - u(t-a)]$, $a > 0$

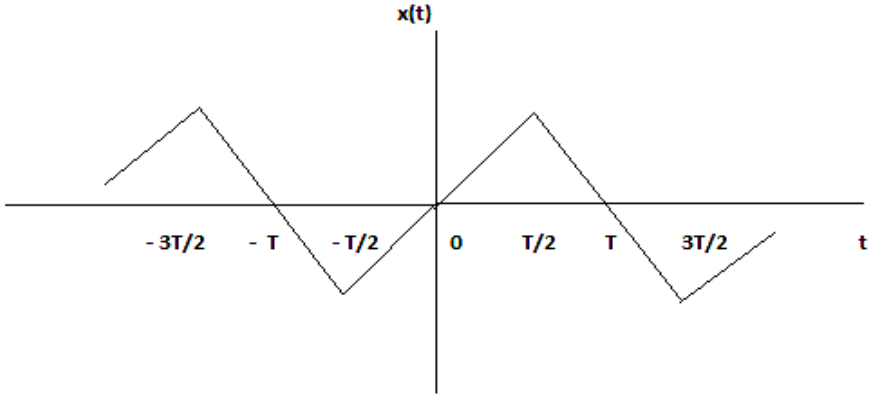
(OR)

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 $\mathbf{h(t) = e^{-\alpha t}\,u(t)}$ and $\mathbf{x(t) = e^{\alpha t}\,u(t)}$ for $\alpha > 0$. 8 Marks

b) List the properties of Causal, Stable and LTI Systems. 6 Marks

UNIT-II

3 Expand the periodic function $x(t)$ shown in figure by trigonometric Fourier series and also Complex exponential Fourier Series. 14 Marks



(OR)

4 a) Find the Fourier transform of the following function $f(t) = \frac{1}{2\tau} e^{-|t|/\tau}$. 7 Marks

b) Show that if $f(t)$ is a solution of the differential equation: $\frac{d^2x}{dt^2} - t^2 x(t) = a x(t)$. 7 Marks

Then its Fourier Transform is also a solution of the same equation.

UNIT-III

5 a) Find the auto-correlation of the signal $\boldsymbol{x(t) = A\cos(w_o t + \theta)}$. 7 Marks

b) Write all the properties of power spectral density. 7 Marks

(OR)

6 a) What is the relation between correlation and filtering? 5 Marks

b) What is aliasing? What causes it and how can it be reduced? 5 Marks

c) How to reconstruct a signal from its samples using interpolation? 4 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 $\boldsymbol{x(t) = e^{-b|t|}}$ **For** $\boldsymbol{b > 0}$ **and** $\boldsymbol{b \leq 0}$ 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 convolution theorem of Z transform. 7 Marks

b) Find the Z transform of $\boldsymbol{x(n) = [a^n \cos w_0 n]u(n).}$ 7 Marks

(OR)

10 a) Find the impulse response and frequency response of the following discrete time system. 7 Marks

$$y(n) - y(n-1) + \frac{3}{16}y(n-2) = x(n) - \frac{1}{2}x(n-1)$$

b) Using partial fraction expansion method, determine $\boldsymbol{x(n), n \geq 0}$ if its unilateral Z transform $X(z)$ is given by $X(z) = \dfrac{8z^2}{1 - 6z + 8z^2}$. 7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Regular Examinations May - 2016

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)	Convert the following. i) $(11011.1011)_2$ to decimal. ii) $(3FA8.2C)_{16}$ to equivalent binary representation. iii) $(7562.45)_{10}$ to Octal.	6 Marks
	b)	i) Subtract 1100110 and 1100001 using 2's complement form. ii) Explain the construction of Hamming code for 1010 message bits.	8 Marks
		(OR)	
2	a)	Simplify the following Boolean expressions using Boolean algebra properties i) $v + \bar{v}w + \overline{vw}x + \overline{vwx}y + \overline{vwxy}z$ ii) $(\overline{xy} + z) + z + xy + wz$ iii) $\bar{x} + xy + x\bar{z} + x\overline{yz}$	6 Marks
	b)	Obtain the canonical SOP form of the following functions: i) $f(x, y, z) = (xy + z)(xz + y)$ ii) $f(A, B, C, D) = A'D + BD + B'D$	8 Marks

UNIT-II

3	a)	Draw the multi level NOR circuit for the following. (AB′+CD′)E + BC(A+B)	7 Marks
	b)	Simplify the Boolean function using tabular method F(A,B,C,D) = ∑(0,1,2,8,10,11,14,15) + d(3,5)	7 Marks
		(OR)	
4	a)	Simplify the Boolean function and obtain its realization using only NAND gates: F(A,B,C,D) = ∑(0,1,3,4,6,9,11) + d(2,5)	7 Marks
	b)	Assume propagation delay of EX-OR gate is 20ns and OR and AND gate is 10ns and then find the propagation delay 4 bit parallel adder.	7 Marks

UNIT-III

5	a)	Explain the operation of ripple carry adder with a neat diagram.	6 Marks
	b)	Design a 3-bit binary to gray code converter	8 Marks
		(OR)	
6	a)	Implement the following function using (8 : 1) MUX and (4 : 1) MUX $f = \sum (0,2,3,5,7)$	8 Marks
	b)	Realize a full adder circuit using 3 **x** 8 decoder and OR gates.	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 A combinational circuit is defined by the following functions: 14 Marks

$F_1(a, b, c) = \Sigma(3,5,6,7)$

$F_2(a, b, c) = \Sigma(0, 2, 4, 7)$

Implement a PLA circuit having 3- inputs 4 product terms and 2 outputs

(OR)

10 a) What are the different types of hazards in asynchronous sequential circuits? 6 Marks

b) Reduce the following state table using implication table method. 8 Marks

Present State	Next State, Output(z)			
	00	01	11	10
A	–	C, 1	E,1	B,1
B	E,0	–	–	–
C	F,0	F,1	–	–
D	–	–	B,1	–
E	–	F,0	A,0	D,1
F	C,0	–	B,0	C,1

CODE No.:14BT40431 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular Examinations May - 2016

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)	For CE amplifier , what is the maximum value of R_S for which R_o differs by no more than 10 percent of its value for $R_S = 0$. The h-parameter values are h_{fe}=50, h_{ie} = 1.1K, $h_{re} = 2.5 \times 10^{-4}$, h_{oe} = 25μA/V.	8 Marks
	b)	Draw Hybrid - π model for a transistor in the CE configuration and explain the significance of every component in this model.	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)	Draw the circuit diagram of voltage shunt feedback amplifier and derive expressions for voltage gain and feedback factor.	10 Marks
	b)	Explain the concept of feedback as applied to electronic amplifier circuit. What are the advantages and disadvantages of positive and negative feedback?	4 Marks

(OR)

4	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

UNIT-III

5	a)	Derive the equation for power output and conversion efficiency of a class A series fed Amplifier.	8 Marks
	b)	Discuss the origin of various distortions in transistor amplifier circuits.	6 Marks

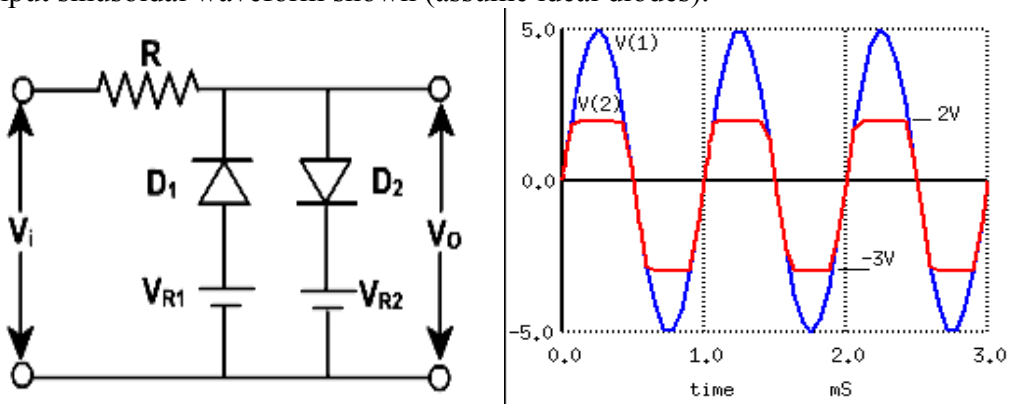
(OR)

6	a)	Draw the push-pull power amplifier circuit. Derive the expression for the output current in push pull amplifier with base current as $I_b = I_{bm} \sin \omega t$.	8 Marks
	b)	What is harmonic distortion in transistor amplifier circuits? Discuss second harmonic distortion.	6 Marks

UNIT-IV

7 a) Derive the transfer function, sinusoidal and step response of a high pass RC circuit. 7 Marks

b) Design a clipping circuit below which can give the output waveform for the input sinusoidal waveform shown (assume ideal diodes). 7 Marks



(OR)

8 a) Draw the circuit diagram of a DC restorer (clamping circuits) and explain its operation with neat diagrams. 7 Marks

b) Explain the operation of transistor as a switch with neat diagrams and waveforms. 7 Marks

UNIT-V

9 Design a Schmitt trigger circuit using n-p-n silicon transistors to meet the following specifications: V_{cc}= 12V, UTP = 4V, LTP=2V, h_{fe}=60, I_{c2}=3mA. Use relevant assumptions and the empirical relationships. 14 Marks

(OR)

10 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

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular Examinations May - 2016

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)	Explain in detail about different protocols and standards used for data communication.	7 Marks
	b)	Write short notes on network classifications.	7 Marks
		(OR)	
2	a)	Determine peak amplitudes and frequencies for the first five odd harmonics of a symmetric square wave with peak to peak amplitude of 8V and time period of 1ms.	7 Marks
	b)	Describe Trellis code modulation.	7 Marks

UNIT-II

3	a)	Write short notes on plenum cables and coaxial transmission lines.	7 Marks
	b)	Discuss in detail about the classification of transmission lines and also list out the differences between STP and UTP transmission lines.	7 Marks
		(OR)	
4	a)	Explain in detail about different losses associated with optical fibers.	7 Marks
	b)	Compare and contrast single mode step index fiber, multimode step index fiber and multimode graded index fiber.	7 Marks

UNIT-III

5	a)	What do you understand by commanding? Compare analog commanding and digital commanding.	8 Marks
	b)	What is super frame and extended super frame time division multiplexing (TDM) format? Explain each with an example.	6 Marks
		(OR)	
6	a)	Explain the concept of pulse code modulation with a neat block diagram.	6 Marks
	b)	Discuss in details T1 and T2 carrier system.	8 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)	What do you mean by cross talk? 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 neat sketches.	8 Marks
	b)	Write about different Hand-off mechanisms.	6 Marks
		(OR)	
10	a)	Briefly describe the error-detection schemes of 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) Regular Examinations May - 2016

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)	Write 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 Booth algorithms for (-13)*(+16).	10 Marks
	b)	Convert the following decimal numbers to binary: 1231, 673 and 1998.	4 Marks

UNIT-II

3		Make a comparison between the hardwired control and micro programmed control. Is it possible to have a hardwired control associated with a control memory?	14 Marks

(OR)

4		What are the differences between a microprocessor and a micro program? Is it possible to design a microprocessor without a micro program? Are all micro-programmed computers also microprocessors? Discuss in detail.	14 Marks

UNIT-III

5	a)	When large amount of data is to be transferred from CPU, which I/O module can be used? Explain in detail about that I/O module.	7 Marks
	b)	Discuss in detail about Interrupt Driven I/O.	7 Marks

(OR)

6		A certain disk interface accepts request to read a 1 Kb 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	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 Arithmetic Pipelining processing with an example.	7 Marks
	b)	Discuss Flynn classification for Multiple Processor Organizations.	7 Marks
		(OR)	
10	a)	Explain in detail about Inter Process Synchronization.	7 Marks
	b)	Suppose an un-pipelined processor with a 25 ns cycle time is divided into 5 pipeline stages with latencies of 5, 7, 3, 6 and 4 ns. If the pipeline latch latency is 1ns, what is the cycle time of the resulting processor?	7 Marks

CODE No.:14BT40502 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular Examinations May - 2016

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)	List the differences between database system vs file system.	7 Marks
	b)	What is Data Abstraction? Explain each of level.	7 Marks
		(OR)	
2	a)	Explain the features of the ER-models.	7 Marks
	b)	Discuss about the concept design with the ER model.	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 meant by SQL? Explain about nested queries and NULL values in SQL.	7 Marks
	b)	Discuss about complex integrity constraints in SQL.	7 Marks
		(OR)	
6		Explain in detail about all functional dependencies based normal forms with suitable examples.	14 Marks

UNIT-IV

7	a)	How is the log used in transaction roll back and crash recovery?	7 Marks
	b)	Explain the concept of shadow paging with a suitable example.	7 Marks
		(OR)	
8		Explain the following i) Validation based protocols. ii) Deadlock handling	14 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) Regular Examinations May - 2016

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	a)	Explain with an example, how the performance of collapsing find is better than simple find.	7 Marks
	b)	Write the Psuedo-code conventions for expressing algorithms.	7 Marks
		(OR)	
2	a)	Solve the following recurrence relations; i) $T(n) = 4T(n/3)+n^2$ ii) $T(n) = T(n-1)+1, T(1) = 1$	8 Marks
	b)	Write an algorithm to find the largest of n numbers.	6 Marks

UNIT-II

3	a)	Explain about the Control Abstraction of Divide and Conquer method.	6 Marks
	b)	Write an algorithm to find Spanning Tree using BFS.	8 Marks
		(OR)	
4	a)	Analyze the time complexity of Quick sort on 1, 2, 3, 4, 5, 6, 7.	8 Marks
	b)	What is an abstraction point and write an algorithm to find Articulation points in a Graph?	6 Marks

UNIT-III

5	a)	Write a Greedy algorithm to the Job sequencing with deadlines.	7 Marks
	b)	Explain 'All Pair Shortest' problem with example.	7 Marks
		(OR)	
6	a)	Compare Kruskhal's and Prim's algorithm. Give their time complexities.	7 Marks
	b)	Derive the recurrence relation of reliability design problem.	7 Marks

UNIT-IV

7	a)	Write an algorithm for Hamiltonian cycle with an example.	7 Marks
	b)	Explain the general method of Branch and Bound.	7 Marks
		(OR)	
8	a)	Solve the 4-queens problem using backtracking.	7 Marks
	b)	Draw the state space tree for '*m*' coloring when $n = 3$ and $m = 3$, where n represents vertices and m represents edges.	7 Marks

UNIT-V

9	a)	Explain the classes of P and NP.	7 Marks
	b)	What are the various problems involved in NP-Hard scheduling.	7 Marks
		(OR)	
10	a)	Explain the satisfiability problem and write the algorithm for the same.	7 Marks
	b)	Explain non-deterministic algorithms with an example.	7 Marks

CODE No.:14BT41201 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular Examinations May - 2016

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 concept of type conversion and casting.	7 Marks
	b)	Explain about 'this' keyword with suitable Java Program.	7 Marks
		(OR)	
2	a)	Explain about Method Over loading with suitable Java Program.	7 Marks
	b)	Explain about various String Handling methods with the help of suitable 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)	Write a Java program to change the priority of a thread.	7 Marks
	b)	Explain the need for synchronizing threads. Demonstrate with a suitable program.	7 Marks
		(OR)	
6	a)	Explain the terms: "final", "finally", "finalize".	6 Marks
	b)	What is an exception? How exception can be handled in Java in different ways.	8 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 & 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 process of loading the driver and establishing the connection in database connectivity.	7 Marks
	b)	Write short note on the Servlet API.	7 Marks
		(OR)	
10	a)	Explain about different types of JDBC drivers.	7 Marks

b) Explain the process of creation and compiling of Servlet Source Code. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular Examinations May - 2016

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 operations of the following devices. i) Raster Scan Displays ii) Graphics Monitors and Workstations.	7 Marks
	b)	Explain in detail about the DDA algorithm.	7 Marks
		(OR)	
2	a)	Explain in detail about the Scan line polygon fill algorithm.	7 Marks
	b)	Explain in detail about the Bresenham's Line algorithm.	7 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		Explain in detail about Parallel Projections and 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	a)	Distinguish between object-space and image space methods of visible surface detection algorithm. Give example for each.	7 Marks
	b)	Discuss about the scan line method for visible surface detection.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular Examinations May - 2016

CONTROL SYSTEMS

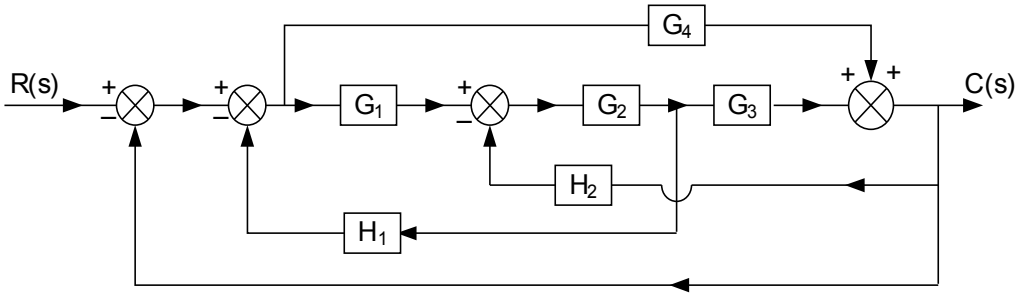
[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

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

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

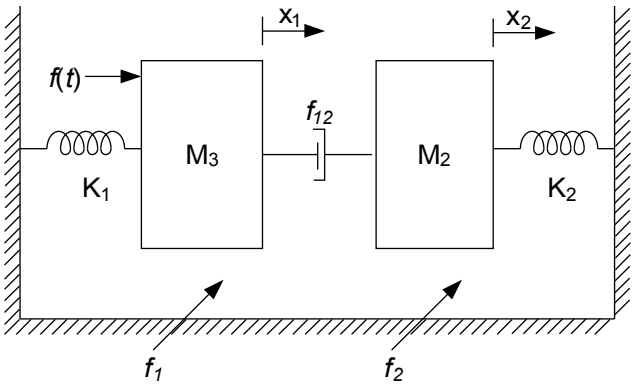
1 a) Draw the signal flow graph and derive the transfer function of the system using masons gain formula. 7 Marks



b) Obtain the transfer function of Armature controlled DC motor. 7 Marks

(OR)

2 a) Write the differential equations for mechanical system shown in figure and obtain an analogous electrical circuit in force-voltage analogy. 8 Marks



b) Explain the principle and operation of synchro. 6 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 and 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 **$s^6+3s^5+5s^4+9s^3+8s^2+6s+4=0$**, also determine the number of roots on the right half s-plane. 8 Marks

b) Discus the effect of addition of poles and zeros to open loop transfer function. 6 Marks

(OR)

6 The open loop transfer function of a feedback system is **$G(s)H(s)=K / s(s+4)(s^2+4s+20)$**. Obtain root locus plot and determine range of K for which the system is stable. 14 Marks

UNIT-IV

7 Sketch the polar plot for the transfer function $G(s) = \dfrac{10}{s(s+1)(s+2)}$. Find its gain margin and phase margin. 14 Marks

(OR)

8 a) Explain about Lag compensator. 4 Marks

b) Draw the bode plot for the transfer function $G(s) = \dfrac{Ks^2}{(0.2s+1)(1+0.02s)}$. Determine the value of K for a gain cross over frequency of 20 rad/sec. 10 Marks

UNIT-V

9 a) Obtain the state space representation of the system whose differential equation is given by **$Y_3+2Y_2+3Y_1+6Y_0=U_2-U_1+2U_o$**. Also draw the signal flow graph for the system. 6 Marks

b) Obtain the solution for state equation $\dot{X} = \begin{bmatrix} 0 & 1 \\ -1 & -2 \end{bmatrix} X + \begin{bmatrix} 0 \\ 1 \end{bmatrix} u$, $X_0 = \begin{bmatrix} 0 \\ 1 \end{bmatrix}$, where 'u' is a unit step input. 8 Marks

(OR)

10 a) Find the Eigen value and Eigen vectors of the system represented with state space matrix A. Also derive diagonal matrix for the system. 6 Marks

$$A = \begin{bmatrix} 1 & 1 & 2 \\ 0 & 2 & 0 \\ 0 & 0 & 2 \end{bmatrix}$$

b) Determine whether the following system is completely State controllable and observable using kalman's test. 8 Marks

$$A = \begin{bmatrix} 0 & 1 & 1 \\ 0 & 0 & 1 \\ -1 & -3 & -3 \end{bmatrix} \quad B = \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix} \quad C = \begin{bmatrix} 0 & 1 & -1 \end{bmatrix}$$

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech II Semester (SVEC14) Regular Examinations May - 2016

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)	Obtain the response of low pass RC circuit to the step input voltage for rise time, fall time Peak over shoot and damping ratio.	10 Marks
	b)	An amplifier gives an output of 2 KHz with a rise time of 350 ns and a tilt of 4%. Find upper and lower 3dB frequencies.	4 Marks

(OR)

2	a)	Define attenuator .Give the analysis of the compensated attenuator circuit with characteristics.	8 Marks
	b)	Distinguish between switching operation of diodes, BJTs and FETs.	6 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*wt at +3Vand -5V level. Sketch the waveforms neatly.	7 Marks
	b)	State and prove clamping circuit theorem.	7 Marks

UNIT-III

5	a)	Distinguish between symmetrical and asymmetrical triggering.	6 Marks
	b)	Design and analyze the collector coupled Astable multivibrator and also derive expression for time period.	8 Marks

(OR)

6	a)	Draw the Schmitt-trigger circuit and explain its operation with hysteresis.	8 Marks
	b)	What is multivibrator? Give the applications of monostable and astable multivibrators.	6 Marks

UNIT-IV

7	a)	Explain briefly about different methods of generating time-base waveform.	7 Marks
	b)	Discuss in detail about correction of linearity through the adjustment of driving waveform for a current time-base waveform.	7 Marks

(OR)

8	a)	Explain i) Sweep speed error and ii) Displacement error.	7 Marks
	b)	Draw the circuit of Miller's sweep using transistor and explain the operation.	7 Marks

UNIT-V

9	a)	With the help of a neat circuit diagram and waveforms, explain the operation of four diode sampling gate.	7 Marks
	b)	Explain in detail about one application of sampling gates.	7 Marks

(OR)

10	a)	Draw the circuit of three input NAND gate and explain the operation.	7 Marks
	b)	Compare different logic families performance.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular Examinations May - 2016

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 Prove that if L is accepted by NFA with epsilon transitions, then L is accepted NFA without epsilon transitions. 14 Marks

(OR)

2 Prove that if L be a set accepted by NFA, then there exists a DFA that accepts L. 14 Marks

UNIT-II

3 Write a regular expression which describes the language of binary numbers from the alphabet {0,1} which are either odd or a power of 2 (or both). 14 Marks

(OR)

4 For the two regular expressions given below, 14 Marks
(i) find a string corresponding to $\mathbf{r_2}$ but not to $\mathbf{r_1}$.
(ii) find a string corresponding to both $\mathbf{r_1}$ and $\mathbf{r_2}$.
$\mathbf{r_1 = a^* + b^*}$ $\mathbf{r_2 = ab^* + ba^* + b^*a + (a^*b)^*}$

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

$S \rightarrow A \quad A \rightarrow aS \quad A \rightarrow a$
$S \rightarrow B \quad B \rightarrow bS \quad B \rightarrow b$

Is this grammar ambiguous? Justify your answer

(OR)

6 Consider the following grammar with start symbol S: 14 Marks

$S \rightarrow$ *if* id *then* S *else* S
$S \rightarrow$ *if* id *then* S
$S \rightarrow$ id

Show that this grammar is ambiguous by giving two distinct parse trees for the sentence: *if* id *then if* id *then* id *else* id

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 14 Marks
i) L1U L2 ii) L1∩ L2 iii) L1

(OR)

10 Explain Primitive recursive function. 14 Marks

CODE No.:14BT51501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC14) Regular Examinations May - 2016

OPERATING SYSTEMS

[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 a Distributed System? Distinguish between client/server and peer to peer models of Distributed Systems. 7 Marks

b) Explain Solaris OS design structure. 7 Marks

(OR)

2 a) Consider the following set of processes with the length of CPU burst given in milli seconds. 7 Marks

Process	Burst Time	Priority
P1	10	3
P2	1	1
P3	2	3
P4	1	4
P5	5	2

Processes are arrived to have arrived in the order P1, P2, P3, P4, P5 all at time 0.

i) Draw the Gantt Charts for FCFS, SJF, non preemptive priority, RR(quantum=1)

ii) Calculate waiting time, turn around time of each process for each of these scheduling algorithms.

iii) Which of these algorithms results in minimum average waiting time?

b) Explain multithreading. 7 Marks

UNIT-II

3 a) Explain the critical section problem. 7 Marks

b) Explain the solution for Dining Philosophers problem. 7 Marks

(OR)

4 a) Explain the resource allocation graph algorithm. 7 Marks

b) Explain Banker's algorithm. 7 Marks

UNIT-III

5 a) What is the purpose of paging in the page table? 4 Marks

b) Given five memory partitions of 100KB, 500KB, 200KB, 300KB, 600KB in order. How would the first-fit, best-fit, worst-fit algorithms place processes of 212KB, 417KB, 112KB, and 426 KB in order? Which algorithm makes the most efficient use of memory? 10 Marks

(OR)

6 a) Consider the following page reference string 10 Marks
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, FIFO, Optimal replacement algorithms assuming seven initially empty frames?

b) How does the system detect thrashing? 4 Marks

UNIT-IV

7 a) Explain file attributes and file operations. 7 Marks

b) Explain linked allocation of disk space. 7 Marks

(OR)

8 a) How is data read from magnetic disk? 4 Marks

b) Suppose that a disk drive has 5,000 cylinders, numbered 0 to 4,999. The drive is currently serving a request at cylinder 143 and the previous request was at cylinder 125. the queue of pending requests in FIFO order is 86, 1470, 913, 1774, 948, 1509, 1022, 1750, 130. 10 Marks

Starting from the current head position, What is the total distance(in cylinders) that the disk arm moves to satisfy all pending requests or each of the following disk scheduling algorithms?

i) FCFS ii) SSTF iii) SCAN iv) LOOK v) C-SCAN

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

CODE No.:10BT3BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

PROBABILITY AND STATISTICS

[Civil Engineering, Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Let A and B any two events of the sample space S. Then show that,
   i) $P(A/B) \geq 0$
   ii) $P(S/B) = 1$ and
   iii) $P\left(\bigcup_n \frac{A_n}{B}\right) = \sum_n P\left(\frac{A_n}{B}\right)$
   where $P(B) > 0$

   b) A problem in Statistics is given to three students A, B and C whose chances of solving it are $\frac{1}{2}, \frac{3}{4}$ and $\frac{1}{4}$ respectively. What is the probability that the problem will be solved?

2. If X and Y are independent Poisson variates, such that $P(X=1) = P(X=2)$ and $P(Y=2) = P(Y=3)$ find the variance of X-2Y.

3. The following table shows the respective heights X and Y of a sample of 12 fathers and their oldest sons respectively.

X	65	63	67	64	68	62	70	66	68	67	69	71
Y	68	66	68	65	69	66	68	65	71	67	68	70

   i) Find the coefficient of correlation and interpret.
   ii) Fit a regression line of Y on X.

4. a) In the context of tests of significance explain the following terms:
      i) Null and alternative Hypotheses.
      ii) Level of significance.
      iii) Power of the test.
      iv) Degrees of freedom.
   b) Outline the procedure for testing of hypotheses.

5. a) A large sample of 200 students from the students of a certain high school is interviewed and 85 of them are found to use city buses. Can you conclude that at least 40% ($P > 0.40$) of the students use city bus? Use a 0.05 level of significance.

   b) A random sample of 100 recorded deaths during the past year showed an average life span of 71.8 years. Assuming a population standard deviation of 8.9 years, does this seem to indicate that the mean life span today is greater than 70 years? Use a 0.05 level of significance.

6. a) It is claimed that a vacuum cleaner uses an average of 46 kilowatt hours per year. If a random sample of 12 homes included in a planned study indicates that vacuum cleaners use an average of 42 kilowatt hours per year with a standard deviation of 11.9 kilowatt hours, does this suggest at the 0.05 level of significance that vacuum cleaners use, on average, less than 46 kilowatt hours annually? Assume the population of kilowatt hours to be normal

   b) Random samples of 200 men, all retired were classified according to education and number of children is as shown below. Using chi-square test the hypothesis that the size of the family is independent of the level of education attained by fathers. (Use 5% level of significance)

Education level	*Number of children*		
	0-1	*2-3*	*Over 3*
Elementary	14	37	32
Secondary and above	31	59	27

7. a) Explain what are chance causes and assignable causes of variation in the quality of manufactured Product.

   b) Derive $\overline{X}$ and R charts and explain them in detail.

8. A TV repair man finds that the time spent on jobs has an exponential distribution with mean 30 minutes. If he repairs sets on the first come and first served basis and if the arrival of sets is approximately Poisson with an average rate of 10 per 8 hour day, what is repair man's expected idle time each day? Also obtain average number of units in the system.

CODE No.:10BT3BS02

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

ENVIRONMENTAL SCIENCES

[Civil Engineering, 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) What is mean by Environment? Explain the different strategies of Environment.
b) Explain the various components of the environment.

2. a) Discuss various types of land degradation with its causes and remedial measures.
b) Compare various types of energy with respect to its suitability for Indian conditions.

3. a) Write an essay on Forest Ecosystem.
b) Write the special features of Estuaries and Mangroves.

4. a) Explain the in-situ and ex-situ conservation of biodiversity.
b) Write a note on man and wildlife conflicts.

5. Explain the following:
i) Floods.
ii) Earth quack.
iii) Tsunamis.
iv) Cyclones.

6. a) Enumerate rainwater harvesting methods currently being adopted in your localities and try to propose suggestions for improvement.
b) Discuss salient features of Air (prevention and control of pollution) Act, 1981.

7. a) What is population growth and its impacts on environment?
b) What is occupational health hazards and explain with an example?

8. Explain the following:
i) AIDS;
ii) Prepare a field report of the onsite of a Marine ecosystem.

CODE No.:10BT4EC01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

OPTIMIZATION TECHNIQUES

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain various steps involved in formulation of objective function and constraints.
   b) What are the limitations of classical optimization problems?

2. a) Find the dimensions of a cylindrical tin (with top and bottom) made up of sheet metal to maximize its volume such that the total surface area is equal to $A_0 = 24\pi$.
   b) Find the maxima and minima, if any, of the function $\mathbf{f(x) = 4x^3 - 18x^2 + 27x - 7}$.

3. Solve the following using two phase method
   Maximize $Z = 5x_1 + 2x_2 + x_3$
   subject to
   $$x_1 + 3x_2 - x_3 \le 6,$$
   $$x_2 + x_3 \le 4,$$
   $$3x_1 + x_2 \le 7,$$
   $$x_1, \quad x_2, \; x_3 \ge 0.$$

4. a) Distinguish between assignment and transportation problems.
   b) Briefly describe the steps of the Vogel's approximation method to obtain an Initial Basic Feasible Solution.

5. a) What are the various search methods?
   b) Solve the following by using quadratic interpolation method.
   Minimize $\mathbf{f(x) = (1-2x)^4-3(1-2x)\,(2-11x)-2(2-11x)^2.}$

6. Perform two iterations of steepest descent (Cauchy) method to minimize the function
   $f(x_1,x_2) = 100(x_2 - x_1^2)^2 + (1 - x_1)^2$ from the starting point $\begin{Bmatrix} -1.2 \\ 1.0 \end{Bmatrix}$.

7. Explain Interior penalty function method. Using this method
   Minimize $\frac{1}{3}(x_1+1)^3 + x_2$.
   subject to $-x_1+1x_2 \le 0$
   $$-x_2 \le 0$$

8. a) What is a multistage decision process and what are the types of it?
   b) Explain the concept of suboptimisation and principle of optimality.
   c) How many state variables are to be considered if an LP problem with ***n*** variables and ***m*** constraints is to be solved as a dynamic programming problem?

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CODE No.:10BT30121

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

FLUID MECHANICS AND HYDRAULIC MACHINERY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the classification of fluids and give one example for each type of fluid.
b) Calculate the capillary rise in a glass tube of 3.0 mm diameter when immersed vertically in (i) water and (ii) mercury. Take surface tensions for mercury and water as 0.0725 N/m and 0.52 N/m respectively in contact with air. Specific gravity for mercury is given as 13.6.

2. a) Explain different types of fluid flows.
b) A horizontal conical water pipe has a diameter of 1.2 m at the larger end and 0.6 m diameter at the smaller end. The pressure head at the larger end is 15 m of water and at the smaller end 12 m of water. Find the discharge through the pipe.

3. a) What do you understand by pipes in series, pipes in parallel and equivalent pipe?
b) A venturimeter is used for measurement of discharge of water in horizontal pipe line. If the ratio of upstream pipe diameter to that of throat is 2: 1, upstream diameter is 300 mm, the difference in pressure between the throat and upstream is equal to 3 m head of water and loss of head through the meter is one-eighth of the throat velocity head, calculate the discharge in the pipe.

4. a) Obtain an expression for the force exerted by a jet of water on a moving vertical plate in the direction of jet.
b) A jet of water of diameter 50 mm moving with a velocity of 20 m/s strikes a fixed plate in such a way that the angle between the jet and the plate is 60^{o}. Find the force exerted by the jet on the plate in the direction of the jet.

5. a) Enumerate principal components of a hydroelectric scheme along with their locations and purposes.
b) Explain in detail, how you assess the water potential of a hydroelectric scheme.

6. a) Draw a neat sketch of a Francis turbine and explain the functions of each component.
b) A Kaplan turbine is to be designed to develop 10000 HP. The net available head is 10 m. Assume speed ratio as 1.8 and flow ratio 0.6. If the overall efficiency is 70 % and diameter of the boss is 0.4 times the diameter of the runner, find the diameter of the runner, its speed and specific speed.

7. a) Define unit head, unit power and specific speed of a turbine.
b) Explain Cavitation in case of a hydraulic turbine
c) A turbine is to operate under a head of 25 m at 200 r.p.m. The discharge is 9 m^3/sec. If the efficiency is 90%, determine:
i) Specific speed for the machine ii) Power generated
iii) Type of the turbine iv) Performance under a head of 2 m.

8. a) Explain the working principle of a Centrifugal Pump with the help of a neat diagram.
b) For a reciprocating pump with no air vessel, stroke length=300 mm, piston diameter=125 mm, suction pipe diameter=75 mm, length of suction pipe=6m and suction head=3 m. atmospheric pressure= 10.3 m of water and separation may be assumed to occur when the absolute pressure head in the cylinder falls below 2.5 m of water. Calculate the maximum speed at which the pump may be run if separation is to be avoided.

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CODE No.:10BT40101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

STRUCTURAL ANALYSIS - I

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Derive expressions for the principal stresses in strained body in terms of σ_x, σ_y and τ_{xy}.
b) At a point in a strained material the normal stresses on two planes at right angles are 80 N/mm^2 (tensile) and 60 N/mm^2 (compressive). Find the resultant intensity of stress on a plane inclined at 30^0 to the axis of minimum principal stress.

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 3 kN/m acting between the mid span and free end. Take EI = 10^4 kN.m^2.

3. Compute the maximum slope and deflection for the beam shown in Fig.1, using Moment-Area method. *EI*=12,000 kNm^2.

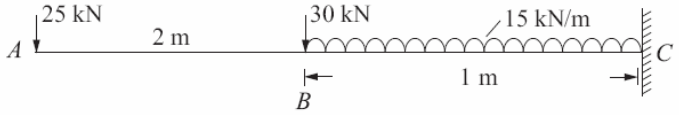

Fig.1

4. A hollow cast-iron column whose outside diameter is 240 mm and has a thickness of 20 mm is 5.6 m long and is fixed at both ends. Calculate the safe load by Rankine's formula using a factor of safety of 2.8. Find the ratio of Euler's to Rankine's loads. Take $\mathbf{E_{cast\ iron}}$ = 107 GPa and Rankine's constant = 1/1660 for both ends pinned case and the crushing strength of the material as 565 MPa.

5. a) Derive expression for shear strain energy per unit volume in terms three principal stresses.
b) Design the diameter of a circular shaft subjected to combined bending and twisting with bending moment of 10 kN.m and twisting moment of 8 kN.m. The safe stress in direct tension is 200 MPa and μ = 0.3

6. a) Derive an expression for the crippling load of a column with one end fixed while the other end is hinged.
b) For what value of slenderness ratio of a circular column will have same Euler's critical load and Rankin's critical load. Take E=200 GPa and Yield stress of the material is 300 MPa.

7. A fixed beam AB is having a span of 6 m. Two concentrated loads of 75 kN and 50 kN acts on the beam respectively at 2 m 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 cantilever beam of symmetrical I section with 2 m span is subjected to a concentrated load of 30 kN inclined 45^0 to the vertical at the free end of the cantilever. Determine the deflection at the free end of the cantilever. The cross section is symmetrical I section with flange size 125 mm **x** 10 mm and web 200 mm **x** 8 mm. Take E = 200 GPa.

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CODE No.:10BT40102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

FLUID MECHANICS - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define (i) Boundary layer thickness (ii) Displacement thickness and (iii) momentum thickness and give expressions for the same.
b) Explain boundary layer separation and indicate the methods of controlling separation.

2. a) State the conditions for the formation of a hydraulic jump in open channel flow.
b) Establish a relationship between the depths of flow upstream and downstream of hydraulic jump in terms of the upstream Froude number. A sluice gate discharges water into a horizontal rectangular channel with a velocity of 10 m/s and depth of flow of 1 metre. Determine the depth of flow after the jump and consequent loss in total head.

3. a) What is the essential difference between gradually varied flow and rapidly varied flow? Illustrate with neatly drawn sketches.
b) Derive an expression for loss of energy head for a hydraulic jump.

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 15 m/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. Differentiate between:
i) The impulse and reaction turbines
ii) The radial and axial slow turbines
iii) The inward and outward radial flow turbines
iv) Kaplan and propeller turbines

6. a) Explain process governing of turbines with a neat sketch.
b) A Francis turbine operates under a head of 5 m at 210 r.p.m. and develops 75 kW, when the discharge is 1.8 cumec. The runner diameter is 1 m. If the head on this turbine is increased to16 m, determine its new speed, discharge and power.

7. a) Explain different operating characteristic curves of a centrifugal pump with neat sketches.
b) Two geometrically similar pumps are running at the same speed of 1200 r.p.m. The first one has an impeller diameter of 0.35 m and lifts water at 20 lps against a head of 18 m. Determine the size of the impeller and head developed by the second pump to deliver half of the discharge.

8. a) A run-of-river plant with as installed capacity of 12000 kW operates at 25% load factor when it serves as a peak load station. What should be the minimum discharge in the stream so that it may serve as the base load station? The plant efficiency may be taken as 85% when working under a head of 20 m. Also calculate the maximum load factor of the plant when the discharge in the stream is $30 m^3$/sec
b) A run-of-river pant is installed on a river having a minimum flow of 12 m^3/sec. If the plant is used as a peak load operating only for 6 hours a day, determine the firm capacity of the plant (i) without pondage (ii) with pondage but allowing 10 % of the water to be lost in evaporation and other losses. Head at the plant is 15 m and the plant efficiency may be assumed as 80 % .

CODE No.:10BT40103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

REINFORCED CEMENT CONCRETE STRUCTURES - I

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the balanced, under-reinforced and over-reinforced sections as per Working Stress and Limit State Methods.
b) Design a singly reinforced section for a simply supported beam of effective span 5 m carrying an imposed load of 10 kN/m. Use M20 concrete and Fe 415 grade steel. Assume moderate exposure condition. Adopt working stress method. Design reinforcement only for flexure.

2. a) Explain Characteristic strength, Characteristic loads and Partial safety factors.
b) State the assumptions made in limit state method of design.
c) Estimate the stress block parameters in Limit state method.

3. A floor system consists of a slab 110 mm thick, cast integrally on beams spaced at 3 m centre to centre and spanning over 6.6 m. The beam has a width of 300 mm and the total depth of the beam including the thickness of slab is 560 mm. Assume mild exposure condition. The floor is to be designed for a service load of 4 kN/m^2 and 0.9 kN/m^2 for finishes, excluding the self weight of the floor system. Design one intermediate T-beam for flexure using Limit State method. Use M25 concrete and Fe 500 grade steel. Sketch the reinforcement details.

4. a) Explain in brief the design procedure for shear reinforcement.
b) A reinforced concrete beam has a support section with a width of 250 mm and effective depth of 500 mm. The support section is reinforced with 3 bars of 20 mm diameter on the tension side. 8 mm diameter two legged stirrups are provided at a spacing of 200 mm centers. Using M20 grade concrete and Fe 415 grade steel, estimate the shear strength of the support section.

5. Design the reinforcement of a column, 450 mm × 450 mm, subjected to a factored axial load of 1500 kN and a factored moment of 300 kNm. Use M 20 grade concrete and Fe 415 steel.

6. a) Explain the functions of foundation for a structure.
b) Design the footing for a rectangular column 230 mm × 450 mm subjected to an axial load of 1000 kN. Assume the bearing capacity of soil is 180 kN/m^2. Use M 20 concrete and Fe 415 steel.

7. Design a two-way slab of clear dimensions 5 m × 6 m with two adjacent edges discontinuous. The slab is subjected to live load of 3.5 kN/m^2 and floor finish of 0.75 kN/m^2. Assume the width of supports is 230 mm. Use M 20 concrete and Fe 415 steel.

8. a) Briefly explain the Short and Long term deflections of RC beams.
b) A rectangular simply supported beam of span 5m is 300 mm **x** 650 mm in cross section and is reinforced with 3 bars of 20 mm on tension side at an effective cover of 50 mm. Determine the short term deflection due to an imposed working load of 20 kN/m (excluding self weight). Assume M 20 grade concrete and Fe 415 grade steel.

CODE No.:10BT40104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

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 the reasons for providing a Cavity wall and what are the features of a Cavity wall.
   b) Explain in detail the Strap and Mat footings with figures.

2. a) Explain the requirements of a good staircase.
   b) Explain the requirements of a good roof.

3. a) Explain about fire resistant construction.
   b) State the objectives of plastering and pointing. Describe the various types of pointing.

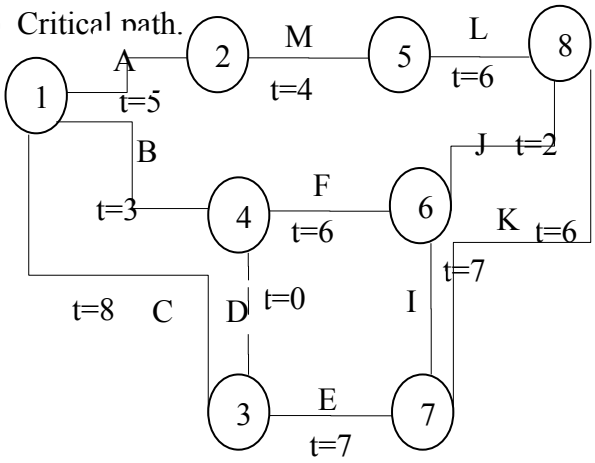
4. a) Explain the types of organization.
   b) Explain the Labour problems and Labour Legislation in India.

5. a) What are the objectives of material management? Describe the functions of material management.
   b) Explain different types of construction equipment with the help of neat sketches.

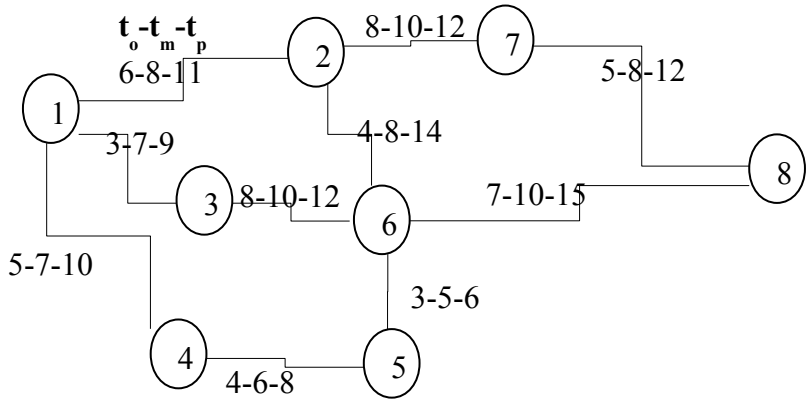
6. a) What is a Milestone chart? What are its limitations?
   Prepare a milestone chart for construction of a residential building.
   b) What are the types of scheduling? Explain them briefly.

7. a) Explain the elements of Network.
   b) Explain the planning for Network construction.

8. a) For the given Network, with the estimated duration of various activities, determine;
   i) Earliest and Latest Even times
   ii) Earliest and Latest Start and Finish times of each activity
   iii) Total and Free float
   iv) Critical path.



b) The Network of a project is shown below. Determine the expected time for each of the path. Find out the critical path.



CODE No.:10BT40201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

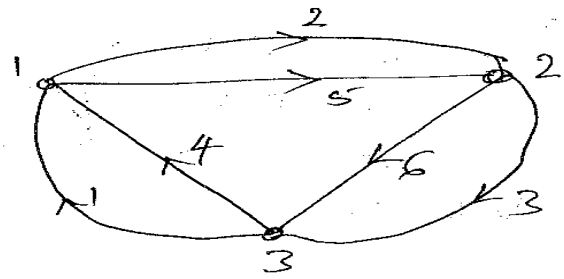
NETWORK ANALYSIS AND SYNTHESIS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Consider the topological graph shown in figure below. For the tree chosen with elements 5 and 6, construct the tie-set schedule.



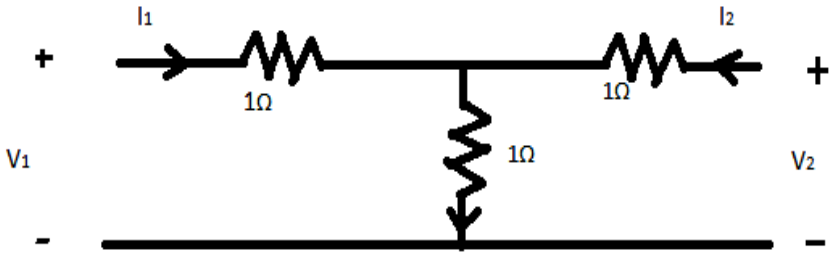
2. a) Explain odd function symmetry.

b) The voltage and current in a circuit are represented as follows:
$V = 120 \sin(\omega\tau + 30^0) - 50 \sin(3\omega\tau + 60^0) + 30 \sin 5\omega\tau$ volts
$I = 20 \sin(\omega\tau + 30^0) + 16 \sin(3\omega\tau + 30^0) + 10 \cos(5\omega\tau - 60^0)$ Amps.
Determine the power consumed in the circuit and the overall power factor.

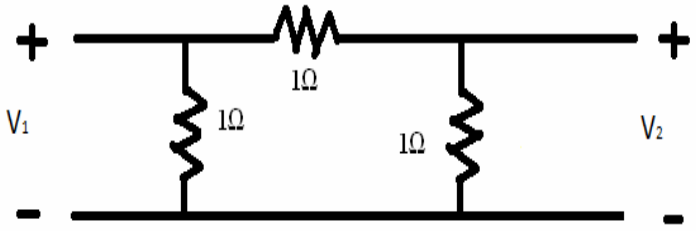
3. a) Define Laplace transform and explain the advantages over classical method.

b) Find initial and final values of the function $F(s) = \dfrac{s^3 + 3s^2 + 3s + 1}{s^2 + 2s + 2}$.

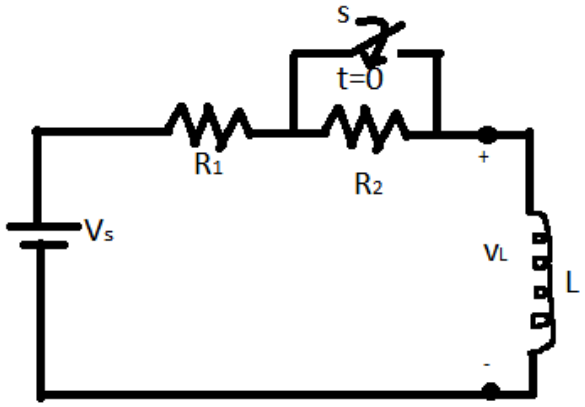
4. a) Find Y parameters for the following network shown below.



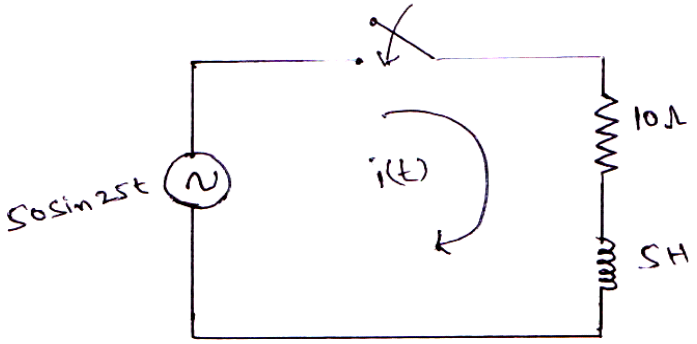
b) Estimate Hybrid (h) parameters for the following network.



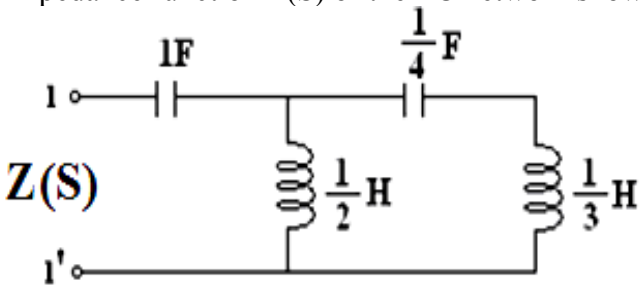
5. a) Derive an expression for the transient response of RC series network for a DC excitation.
b) Determine the inductor current for t > 0 in the network shown in fig below. The switch S has been open for a long time and is then closed at t = 0.



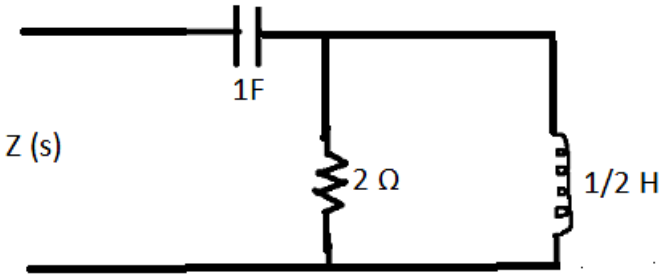
6. The circuit shown bellow figure consists of series RL circuit elements. The sin-wave is applied to the circuit when the switch is closed at t = 0. Determine the current i(t).



7. a) What are the restrictions on location of poles and zeros for Transfer functions?
b) Find the driving point impedance function Z(S) of the LC network shown below.



8. a) Explain positive function.
b) For the network shown in figure below find the driving point impedance Z(s). Locate the poles and zeros.



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CODE No.:10BT40202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

ELECTRO MAGNETIC FIELDS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) State and prove Gauss law, in integral form.
b) Determine $\overline{D}$ at (4, 0, 3) if there is a point charge -5π MC at (4, 0,0) and a line charge 3 πMC/m along *y* axis.

2. a) Derive the expression for potential due to dipole.
b) A point charge Q_1=10 micro coulombs is located at a point P_1(1,2,3) in free space while Q_2=5 micro coulombs is at P_2(1,2,10).
Find :
(i) Force experienced on Q_2 by Q_1.
(ii) The coordinates of a point at which a point charge experiences no force.

3. a) Derive the integral form of current continuity equation from fundamentals.
b) Derive Laplace and Poisson's equation also write the significance of these equations.

4. a) Derive an expression for field intensity due to a solenoid current carrying wire.
b) Determine the magnetic field intensity at the origin due to a current element $6\pi\ \overline{a}_z$ μ A/m at the point (3, -6, 0) in free space.

5. State and Prove Amperes circuital law. Explain the few applications.

6. a) Derive the Lorentz force equation.
b) Explain about the classification of magnetic materials.

7. Evaluate both sides of Stokes Theorem for the field $H = 6xya_x - 3y^2a_y$ A/m and rectangular path around the region $2 \le x \le 6$, $-1 \le y \le 3$, z = 0,the positive direction of ds be a_z.

8. a) Explain the significance of Maxwell's equations.
b) State and explain Poynting theorem.

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CODE No.:10BT40203

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

GENERATION OF ELECTRICAL POWER

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Describe with neat sketch, the structure of electric power system.

2. Draw the schematic arrangement of hydro electric power station and explain its principle of operation.

3. Draw the schematic arrangement of a steam power station and explain its principle of operation briefly.

4. a) Explain with neat sketch, the principle of operation of Nuclear Reactor.
b) Elucidate the advantages and disadvantages of gas power stations.

5. a) Discuss about the balances in 3 wire DC system.
b) A single phase ring distributor ABC is fed at **A**. The loads at **B** and **C** are 20A and 0.8 pt lag and 15A at 0.6 pt lag respectively, both expressed with reference to the voltage at **A**. The total impedance of the three sections AB, BC, CA are (1+il), (1+i2) and (1+i3) ohms. Find the total current fed at **A** and the current in each section.

6. Discuss about different equipments employed in a substation.

7. a) Explain the terms load factor and diversity factor. How do these factors influence the cost of generation?
b) Define and explain the importance of the following terms in generations:
i) Connected Load
ii) Maximum demand
iii) Demand factor
iv) Average load.

8. Explain various methods available for improving power factor of a power system.

CODE No.:10BT40204

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

ELECTRICAL MEASUREMENTS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain deflecting system, controlling system and damping system with reference to an electrical indicating instrument.
   b) Explain different errors and their compensation in measuring instruments.

2. a) Explain the Construction and working of Moving Iron Attraction type instrument.
   b) A ring core current transformer of ratio 1000/5 A is operating at full primary current with a secondary burden of non inductive resistance of 1.1 Ω. Its exciting current is 1A at a power factor of 0.45. Calculate:
      i) The ratio error at full load assuming that there has been no compensation.
      ii) Phase angle.

3. a) If the reactance of the pressure coil circuit of a wattmeter is 1 percent of its resistance, calculate the percentage error due to this cause at power factors of 0.8, 0.5 and 0.1 respectively.
   b) Explain the working of a 3 phase wattmeter. Draw a neat sketch of the wattmeter and also its connections.

4. a) Explain the construction and working of maximum demand indicator.
   b) Explain the two element three phase induction type energy meter.

5. a) Draw the circuit diagram of a Crompton's potentiometer and explain its working.
   b) Describe the steps used when measuring an unknown resistance.

6. a) Explain about Kelvin's Double bridge for the measuring of low resistance.
   b) Explain about Carey foster's bridge.

7. a) Derive the balancing condition for a Schering bridge for measuring capacitance and dissipation factor of an unknown capacitor with help of necessary phasor diagram.
   b) Calculate the unknown inductance and resistance measured by Hay's bridge. The bridge elements at the balancing conditions are $R_1 = 5.1$ KΩ, $C_1 = 2$ μF, $R_2 = 7.9$ KΩ, $R_3 = 790$ KΩ. The supply angular frequency is 1000 rad/sec

8. Explain the construction and working of the following.
   i) Weston type frequency meters.
   ii) Ratiometer type frequency meters.
   iii) Saturable core frequency meters.

CODE No.:10BT40205

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

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) Describe the operation of a single phase transformer, explaining clearly the function of different parts. Why cores of transformers are laminated?
   b) A 1500/100V, 50Hz, single phase transformer is built on a core having an effective cross-sectional area of 150cm^2 and has 80 turns in low voltage winding. What is the (i) maximum flux density in the core and (ii) the number of turns in the HV winding.

2. a) Define regulation of a Transformer and derive the expression for regulation for lagging power factor.
   b) A 11000/230V, 150 KVA, 1-phase, 50 Hz transformer has core loss of 1.4 KW and full load copper loss of 1.6 KW. Determine the KVA load for maximum efficiency, maximum efficiency at unity power factor and the efficiency at half full load, 0.8 p.f leading.

3. a) Explain how OC test and SC tests will be conducted on a single phase transformer.
   b) What is an auto transformer? Explain.

4. a) Explain the working of scott connected transformers with phasor diagram.
   b) Describe the poly phase transformers connections with suitable diagrams.

5. a) Explain the principle of operation of 3 - phase induction motor. Discuss the torque slip characteristics of the motor.
   b) A 3-phase induction motor is wound for 4 poles and is supplied from 50 Hz system. Calculate;
   i) the synchronous speed ii) the rotor speed, when slip is 4% and
   iii) the rotor frequency, when the rotor runs at 600 r.p.m.

6. a) Obtain the equivalent circuit of 3φ induction motor referred to rotor side.
   b) A 3φ induction motor has a synchronous speed of 250 r.p.m. at 4% slip at full load. The rotor has a resistance of 0.02 Ω/phase and a standstill leakage reactance of 0.15 Ω /phase. Calculate the (i) speed at which maximum torque is obtained.
   (ii) ratio of maximum torque to full load torque.
   (iii) ratio of maximum torque to starting torque.

7. Explain the procedure of experimentally constructing the circle diagram for induction motors. Explain how the performance characteristics are obtained from the circle diagram.

8. What are the various methods of speed control of 3-phase induction motor? Explain any two methods in detail with neat diagrams.

CODE No.:10BT40221

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

PRINCIPLES OF ELECTRICAL 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) Obtain the expressions of 'Z' parameters and explain its condition for symmetry and reciprocity.
   b) Obtain the expressions of 'ABCD' parameters in terms of Impedance and Admittance parameters.

2. a) What is a high pass filter? Explain the general configuration and parameters of a constant - K high pass filter.
   b) Design a high pass filter with a cut-off frequency of 1 KHz with a terminated design impedance of 800 **Ω**.

3. a) Discuss in detail about lattice attenuator.
   b) Design a symmetrical **π**-attenuator to provide attenuation of 40 dB and to work in to a line of 600 Ω characteristic impedance.

4. a) Derive the EMF equation of a DC generator.
   b) Draw the load characteristics of the DC generator.

5. a) Explain the significance of phase sequence in three phase systems.
   b) A 400 V, 3-**φ** balanced supply is fed to a star connected three phase load which has a resistance of 8 **ohms** and a capacitive reactance of 10 **ohms** in each phase.
      i) Find the line current, total volt-amperes, active and reactive power.
      ii) Draw the phasor diagram showing phase voltages, line voltages and currents.

6. a) Derive the EMF equation of transformer.
   b) A 15 KVA, 2400/240 V , 60 Hz transformer has a magnetic core of 50 cm^2 cross section and a mean length of 66.7 cm. The application of 2400 causes magnetic field intensity of 450 AT/m (RMS) and a maximum flux density of 1.5 T.
      Determine: i) The turns ratio
      ii) The numbers of turns in each winding.

7. a) Explain the different types of rotors of an Alternator
   b) A 3 Phase 16 pole alternator has a star connected winding with 144 slots and 10 conductors per slot. The flux per pole is 0.003 Wb, sinusoidally distributed and the speed is 375 r.p.m. Find the frequency r.p.m. and the phase EMF. Assume full pitched coil.

8. Draw the circuit diagram of capacitor - start, capacitor - run single phase induction motor and explain its working. Where this type of motor is commonly used?

CODE No.:10BT40301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

KINEMATICS OF MACHINERY

[Mechanical Engineering]

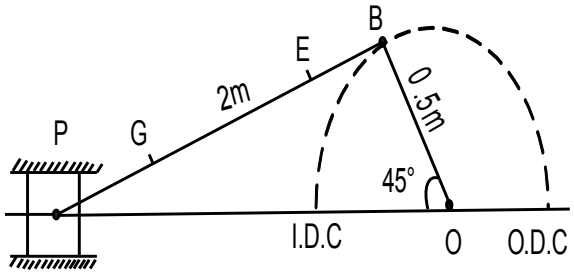
Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the terms : i) Lower pair, ii) Higher pair, iii) Kinematic chain, iv) Inversion
b) Sketch and explain any two inversions of a double slider crank chain.

2. a) Sketch Hart and Scott Russul straight line motion mechanisms.
Explain their working principle.
b) Derive an expression for the ratio of shaft velocities for hooks joint and draw the polar diagram depicting the salient features of driven shaft speed.

3. a) Explain Kleins construction with neat sketch.
b) The crank and connecting rod of a theoretical steam engine are 0.5 m and 2 m long respectively. The crank makes 180 r.p.m. in clockwise direction. When it has turned 45° from the inner dead centre position, Determine :
i) Velocity of position
ii) Angular velocity of connecting rod
iii) Velocity of point E and the connecting rod 1.5 m from the gudgeon pin
iv) Velocities of rubbing at the pins of the crank shaft, crank and cross head when the diameters of the pins are 50 mm, 60 mm and 30 mm respectively
v) Position and linear velocity of any point G on the connecting rod which has the least velocity relative to crank shaft.



4. a) Explain condition for correct steering with a neat sketch.
b) Draw a neat sketch of Davis Steering gear and explain.

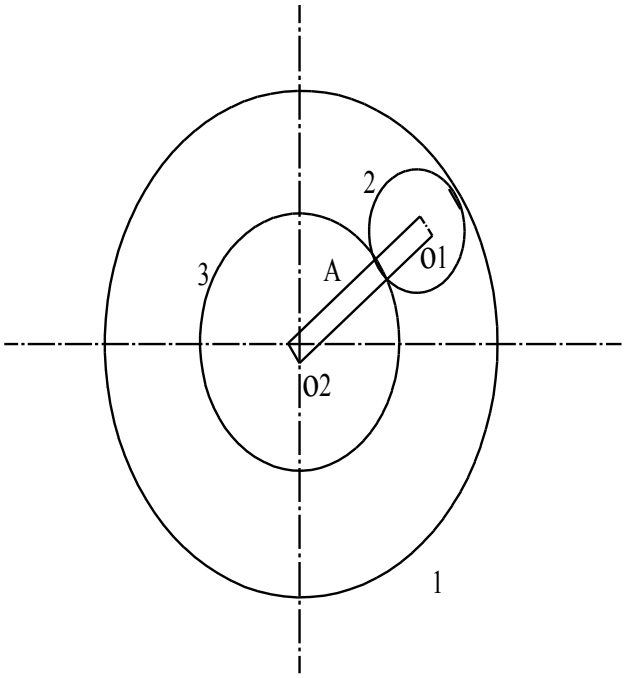
5. a) Enumerate different types of cams and followers commonly used. State their relative merits and demerits.
b) Derive expressions for displacement, velocity and acceleration for roller follower operated by a tangent can when the contact is on straight flank.

6. a) Define arc of contact and deduce the expression to find its magnitude.
b) Derive the relations for deducing the centre distance and efficiency of worm gears.

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 1.2 m diameter pulley on a shaft running at 250 r.p.m. with another pulley running at 500 r.p.m., the angle of lap being 175°, the max permissible load in the belt is 1.35 KN and the co-efficient of friction is 0.25. If the initial tension in the belt may have any value between 900 N and 1100 N, what is the max. power in the belt should transmit?

8. An epicyclic gear train consist of three gears 1, 2, and 3 shown in Fig below. The internal gear 1 has 72 teeth and gear 3 has 32 teeth. The gear 2 meshes with both gears 1 and 3 and is carried on arm A which rotates about centre O_2 at 20 r.p.m. If the gear 1 is fixed, determine the speed of gear 2 and 3.



CODE No.:10BT40302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

THERMAL ENGINEERING - I

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Obtain the expression for mean effective pressure of an Otto cycle.
b) An engine working on a dual combustion cycle has a pressure of 1.01325 bar and 50 °C before compression. The air is then compressed isentropically to 1/15 of its original volume. The maximum pressure is twice the pressure at the end of isentropic compression and cut off ratio is 2. Determine the temperature at the end of each process and the ideal efficiency of the cycle $\gamma = 1.4$.

2. a) Describe the design of a simple carburetor with the help of line diagram. Also explain how the slow running and compensating jets work.
b) Describe with neat sketches the working of a diesel fuel pump.

3. a) Describe with suitable sketches the phenomenon of detonation in S.I Engine.
b) What is Pre-ignition? How can it be detected? What are the effects of pre-ignition?

4. a) Define the terms Stoichiometric air fuel ratio and Equivalence ratio. Explain the effect of Equivalence ratio on the rate of burning in SI engines with neat sketch.
b) List out various factors that affect the flame speed in SI engines.

5. a) Draw and explain the effect of swirl ratio on brake mean effective pressure and specific fuel consumption in Diesel engine.
b) What is the significance of swirl combustion chamber and explain any one category with a neat sketch?

6. a) Describe with a neat sketch the working of vane type compressor and show its P-V diagram.
b) Distinguish between positive and non-positive displacement type compressors.

7. a) Enumerate the applications of compressed air.
b) Prove that volumetric efficiency of a single-stage compressor is given by

$$\eta_{vol} = 1 - k - k\left(\frac{P_2}{P_1}\right)^{\frac{1}{n}} \quad \text{where } \mathbf{k = V_c / V_s}$$

8. a) Develop a stead flow energy equation for a centrifugal stage compressor.
b) Draw and explain about the construction and working of a screw type compressor.

CODE No.:10BT40303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

MANUFACTURING TECHNOLOGY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Why pouring basin is required in gating system? Discuss different types of pouring basins.
   b) Explain design of pouring basin.

2. a) Explain the process of investment casting. Name the industrial applications.
   b) Describe the types of risers and their uses with suitable sketches.

3. a) What are different elements in a typical gating system?
   b) What is the significance of shrinkage in the production of castings?

4. a) Explain the principle of resistance welding with neat sketch.
   b) What metals may be spot welded? Can dissimilar metals be spot weld? Explain.

5. a) Define plastic deformation. Explain different deformation mechanisms.
   b) Explain hot working process with its advantages and disadvantages.

6. a) Differentiate between press forging and drop forging.
   b) A 20 cm thick plate is flat forged to decrease thickness in steps to 10 cm and 5 cm. Determine total strains based on initial and final dimensions and also on the summation of the incremental strains using engineering strain and true strain. Give conclusion.

7. a) Explain metal spinning process with a neat sketch.
   b) Generally the die opening is straight up to a certain length and tapered thereafter. Explain the reason for such a shape.

8. Sketch and explain :
   i) Electro discharge machining with advantages and limitations.
   ii) Ultrasonic machining with advantages and limitations.

CODE No.:10BT40401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

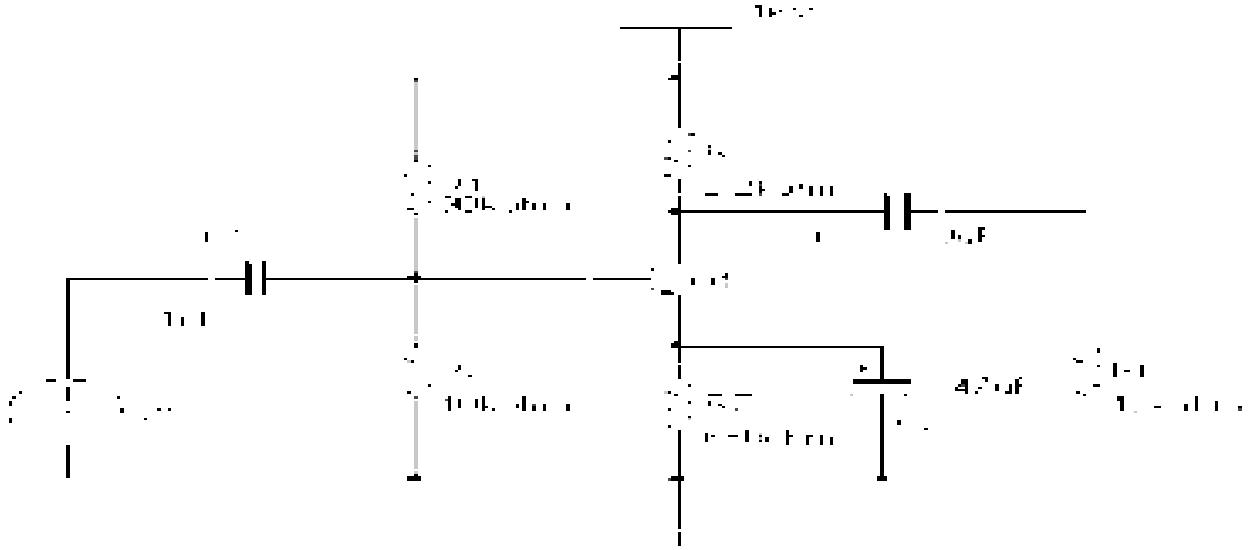
ELECTRONIC CIRCUIT ANALYSIS

[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) For the common emitter amplifier shown, determine the peak -to- peak output voltage for a sinusoidal input voltage of 30 mV 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} and 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) Describe how an emitter follower behaves at high frequencies.

b) A BJT has following parameters measured at I_c = 1 mAmp ; h_{ie}= 3kohm; 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= 1 K ohm.

4. Draw the circuit of Common Gate MOSFET amplifier with resistive load, then with the help small signal model analyze the circuit.

5. Draw the Hartley oscillator with BJT, explain its operation and derive an expression for frequency of oscillations.

6. a) The basic amplifier has a gain of -1000 and feedback factor of -0.10.If due to temperature change, the amplifier gain changes by 10%.Calculate the percentage change in the gain of an amplifier with feedback.

b) Derive an expression for output resistance of current shunt feedback amplifier.

7. a) How the crossover distortion in an A.F power amplifier is eliminated?

b) Prove that the maximum efficiency of class B amplifier is 78.5%.

c) Explain the general features of power amplifier.

8. Draw the double tuned transformer - coupled amplifier circuit. Find the nature of responses of amplifier for different values of KQ = 1, KQ <1 and KQ >1.

CODE No.:10BT40402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

PULSE AND DIGITAL CIRCUITS

[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) Explain the operation of RC high pass circuit for square wave I/P signal and obtain it's response.
b) What is the basic circuit of an integrator? Write about attenuators and their applications.

2. a) Explain in brief about synchronized clamping.
b) State and prove clamping circuit theorem.

3. a) Explain with relevant diagrams the various transistor switching times.
b) Design a transistor switch with the following specifications.
V_{CC} =10V; V_{BB} = 6V; $I_{C(sat)}$ = 8mA; $(h_{FE})_{min}$ = 30.

4. 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.

5. a) Explain the basic principles of Miller and bootstrap time - base generators.
b) Why the time base generators are called sweep circuits?

6. a) Draw the circuit diagram of a bidirectional diode gate and explain its operation. Derive an expression for gain of the gate.
b) Explain the reduction of pedestal in gate circuits.

7. a) Explain the frequency division in a sweep circuit
b) Discuss in brief about a sinusoidal divider using regeneration and modulation.

8. a) Explain the characteristics of logic families.
b) Realize NAND gate in diode - transistor logic and explain its working.

CODE No.:10BT40403

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

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) Define electric potential and obtain expression for electric potential due to n-point charges.
b) An infinitely long uniform line charge is located at y = 3, z = 5 of PL = 30 nc/m. Find 'E' at the origin.

2. a) Define conduction current.
b) From the principle of conservation of charge, derive the continuity equation.
c) 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) Let $\overline{H} = \left(\frac{2}{\pi\rho}\right)\left[1 + \frac{10^7 \rho^3}{6}\right]\bar{a}\phi + \delta\, \bar{a}z \frac{A}{m}$ for $0 \le 0.01$ m,

$\overline{H} = \left(\frac{16}{3\pi\rho}\right)\bar{a}\phi + \delta\, \bar{a}z \frac{A}{m}$ for $\rho > 0.01$ m

i) Find J
ii) Is there a filamentary current at **ρ** = 0 ? If so, what is the Value?
b) Derive an expression for magnetic field intensity **H** everywhere of a infinite sheet carrying current density of $\mathbf{K = k\, a_y}$.

4. a) Derive the equation for the transformer voltages in terms of co-efficient of coupling for N_1, N_2 and i_1, i_2 are number of turns and currents in the primary and the secondary respectively.
b) Determine the tangential and normal components of the boundary conditions for electrostatic fields.

5. a) Explain the wave propagation in a good dielectric medium.
b) A parallel polarized wave propagates from air in to a dielectric at Brewster angle of 65^0, find the relative dielectric constant of the medium.

6. a) Describe about linear and circular polarization.
b) Describe about reflection of plane waves by a perfect dielectric.

7. a) Using the general line equations, obtain an expression for the input impedance of a line.
b) A high frequency line has the following primary constant L = 2 mH/km, C = 0.06 μF/km. R = G = negligible. Determine the characteristic impedance and propagation constant of the line.

8. a) Explain the transmission of TE waves between parallel perfectly conducting plane with necessary expressions and diagrams of the field components.
b) A TEM wave at 1 MHz propagates in the region between conducting plane which is filled with dielectric material of $\mu_r = 1$ and $\epsilon_r = 2$. Find the phase constant and characteristic wave impedance.

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CODE No.:10BT40404

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

SWITCHING THEORY AND LOGIC DESIGN

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Convert the following numbers.
   i) $(1984)_{10}$ to base 8. ii) 110010101.0101 to base 10.
   iii) $(0.4375)_{10}$ to binary. iv) $(FACE)_{16}$ to binary.
   v) $(1256)_8 = (X)_2$.

2. a) What are basic theorems of Boolean algebra?
   b) Realize AND and OR gates using universal gates.
   c) Simplify the following Boolean functions to minimum number of literals.
      i) **X(X'+Y)** ii) **(X'+Y)(X+Y)**
   d) Find the complement of the function: $\mathbf{F_1 = X'YZ' + X'Y'Z.}$

3. Simplify the following Boolean expressions using K-map and implement them using NOR gates:
   a) **F (A, B, C, D) = AB'C' + AC + A'CD'**
   b) **F (W, X, Y, Z) = W'X'Y'Z' + WXY'Z' + W'X'YZ + WXYZ.**
   c) What are the advantages and disadvantages of Tabular method vis-a-vis the K-Map?

4. a) Design BCD to Gray code converter and realize using logic gates.
   b) Describe the operations Performed by i) Full subtractor ii) 4 X 1 MUX with Basic gates.
   c) What is meant by static Hazard?

5. a) What are the advantages of using PLD's in design of digital systems?
   b) What are the steps carried out in synthesis of Threshold functions?
   c) Write short notes on Multigate synthesis.

6. a) Design Modulo -6 synchronous counter using T flip-flips.
   b) Draw and explain 4 - bit bi-directional shift register.

7. Determine minimal state equivalent of state table given below.

PS	NS,Z	
	X=0	X=1
1	1,0	1,0
2	1,1	6,1
3	4,0	5,0
4	1,1	7,0
5	2,0	3,0
6	4,0	5,0
7	2,0	3,0

8. a) Explain salient features of ASM chart.
   b) Draw the state diagram and ASM chart for 2-bit up-down counter having mode control input M = 0 down counting, M = 1 up counting. The circuit should generate output whenever count becomes minimum or maximum.

CODE No.:10BT40421

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

ANALOG ELECTRONIC CIRCUITS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Show that the exact expression for $\mathbf{h_{fe}}$ in terms of CB hybrid parameters is

$$h_{fe} = \frac{-h_{fe}(1-h_{rb}) + h_{ib}h_{ob}}{(1+h_{fb})(1-h_{rb}) + h_{ib}h_{ob}}$$

b) From this exact formula, obtain the approximate expression for $\mathbf{h_{fb}}$.

2. a) Explain the high frequency response for BJT amplifier.
b) The input power to a device is 10,000 W at a voltage of 1000 V, the output power is 500 W and the output impedance is 20 Ω.
i) Find the power gain in decibels.
ii) Find voltage gain in decibels.

3. a) Draw the circuit of voltage shunt feedback and derive the expressions for input and output Resistance.
b) A negative feedback of 0.0005 is applied to an amplifier whose open loop gain is 60 db. If the open loop gain gets reduced by 12% , how much the overall gain gets altered.

4. a) Draw the circuit diagram of a RC phase shift oscillator using BJT. Derive the expression for frequency of oscillations.
b) A Crystal has L= 2 H, C=0.01 pf and R= 2kΩ . Its Mounting capacitance is 2 pf. Calculate its series and parallel resonating frequency.

5. a) Draw the diagram of class-B NPN push pull amplifier using transformer coupled input and explain it.
b) For a class B amplifier providing a 22 V peak signal to an 8 Ω load and a power supply of V_{cc}. Determine:
(i) I/P Power (ii) O/P Power (iii) Circuit Efficiency

6. Write short notes on:
i) Ranging Circuits.
ii) RC Double Differentiator.
iii) RL Circuits.

7. a) Explain the storage and transition times of the diode as a switch.
b) Explain breakdown voltage consideration of transistor.

8. a) Discuss about the different triggering methods used in the multivibrators.
b) What is Schmitt trigger? With the help of a neat circuit diagram and waveforms, explain the working of Schmitt trigger.

CODE No.:10BT40501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

COMPUTER ARCHITECTURE AND ORGANIZATION

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

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

Answer any FIVE questions
All questions carry equal marks

1. a) Give differences between Multiprocessor and Multi computers.
b) Write about the performance of the computer system.

2. a) Write about instruction cycle in detail.
b) Explain various types of instruction formats.

3. Explain the design of micro program sequencer with logic truth table.

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. a) Explain the input-output Processor in detail.
b) Explain in detail the RS 232 serial communication protocol.

7. a) Explain the characteristics of a multiprocessor.
b) Explain system bus structure for multiprocessor with a neat diagram.

8. Discuss in detail about power PC architecture.

CODE No.:10BT40502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

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 briefly the main concepts of object-oriented programming.
b) What are constructor and destructor functions? Explain different types of constructors.

2. a) Explain various types of Inheritance.
b) Describe Pure Virtual function with an example. Write a C++ program using this pointer.

3. a) Write a Java class point to represent a two dimensional point (x, y). Extend it to a class circle with its centre as the point and an additional radius member and extend further to a class cylinder with additional height member.
b) Explain the concept of nested classes in Java with a suitable example.

4. a) What is multiple inheritance? Explain how does Java support multiple inheritance.
b) Illustrate the difference between class and interface.

5. a) Define a package. What is the necessity of packages?
b) Give the classification of exceptions.

6. a) Explain the applet life-cycle. Explain the roles of the init(), start(), stop(), paint() and destroy() methods.
b) Write Java application program for generating 4 threads to do the following operations.
i) getting n numbers
ii) printing even numbers
iii) printing odd numbers
iv) printing average of a numbers

7. a) Explain about AWT class hierarchy.
b) Compare all layout managers and show the differences.

8. a) What are the limitations of AWT? How did they overcome in Swing?
b) Write a Java Program to display the month names by JList and display the Days by JComboBox.

CODE No.:10BT41001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

ELECTRICAL AND ELECTRONIC MEASUREMENTS

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) With relevant sketch, explain the working principle of Attraction type and Repulsion type of Moving Iron Instruments.
   b) i) How the PMMC voltmeter and ammeter range can be extended?
   ii) Design a multirange D.C. milliammeter with a basic meter having a resistance 75Ω and full scale deflection for the current of 2 mA. The required ranges are 0-10 mA, 0-50 mA and 0-100 mA.

2. a) Briefly explain about the construction, working principle and applications of Multimeter.
   b) With a neat sketch and the necessary equations, explain about the Gall-Tinsley potentiometer.

3. a) Derive the torque equation of a Single Phase Electrodynamometer type Wattmeter. How is it that a uniform scale is obtained when the scale span is about -45° to 45° of the position where there is zero mutual inductance between fixed and moving coils?
   b) Describe the constructional details of a Single Phase Induction Energy Meter. Explain why the phase of shunt flux is made exactly in quadrature with that of applied voltage so as to produce a deflecting torque exactly proportional to power.

4. a) With necessary balancing equations, explain the procedure for measuring unknown inductance using Anderson bridge.
   b) Explain about the Schering bridge with the balancing equations.

5. a) Discuss, why are digital instruments becoming popular and mention the merits and demerits of digital instruments over analog instruments.
   b) An analog voltage signal whose highest signal frequency is 1 kHz is to be digitally coded with a resolution of 0.01 percent covering a voltage of 0-10 V.
   Determine i) minimum bits in the digital code. ii) analog value of LSB.
   iii) rms value of quantization error. iv) minimum sampling rate.

6. Explain the following:
   i) Wave analyzer ii) Spectrum analyzer iii) Network analyzer.

7. a) Explain about the electrostatic and electromagnetic deflection system. Also discuss the deflection sensitivity in both cases.
   b) Draw the block diagram of sampling oscilloscope and explain the function of each block.

8. a) Briefly discuss about Magnetic Tape Recorders.
   b) With a neat sketch, explain in detail about the Logic Analyzer.

CODE No.:10BT41002

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

TRANSDUCERS IN INSTRUMENTATION

[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) Explain the various transducers and write their advantages.
b) Determine the confidence interval that has 50% probability of including the true value of a quantity when the average from *n* measurements is $\hat{y}_n$ and the variance is σ^2.

2. a) Define:
(i) Linearity.
(ii) Resolution.
(iii) Hysteresis.
(iv) Threshold.
b) Derive the expression for the magnitude and phase of first order system when subjected to sinusoidal input signal. Draw the magnitude and phase versus frequency plots.

3. a) Describe the construction and working of Thermistor.
b) Describe the construction of foil type strain gauges and explain their advantages over wire wound strain gauges.

4. a) Explain construction, working and applications of Synchros.
b) Explain the construction, working and applications of magnetostrictive transducer.

5. a) Explain the frequency response of capacitive transducers.
b) Explain the variable and differential dielectric capacitive transducer.

6. a) What is see beck effect? Explain the laws of thermocouple.
b) Compare photovoltaic and phoconductive sensors.

7. a) Explain the charge amplifier and derive its output equation and frequency response.
b) Explain chopper amplifier.

8. a) Write short notes on magneto transistors.
b) Explain the construction and working of Fiber - optic transducer.

CODE No.:10BT41201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

DATA COMMUNICATIONS

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the concept of network architecture in communications.
b) Define the terms :
i) Bit rate ii) Information capacity M-ary encoding iii) Coherent binary FSK.

2. a) Write in brief the features of the following transmission media.
b) What are the advantages and disadvantages of using a twisted pair? What are its two forms?

3. a) With the help of neat diagrams, explain the transmitter and receiver of pulse code modulation.
b) Calculate the transmission rate and bandwidth requirement for transmitting 24 voice signals of 4 KHz and 5 V_{p-p} using 8-bit PCM-TDM technique. Also calculate step size for quantising these signals.

4. a) List the advantages and disadvantages of microwave radio communications over cable transmission facilities.
b) Describe the following terms and how they relate to radio wave propagation:
i) refraction ii) reflection
iii) diffraction iv) interference

5. a) Describe basic telephone call procedures.
b) Define crosstalk. Describe nonlinear, transmittance and coupling crosstalk.

6. a) Describe the advantages and disadvantages of cellular telephone compared to analog cellular telephone.
b) Define the following terms:
i) Hand off ii) Frequency reuse
iii) Adjacent channel interference iv) Rooming.

7. a) Describe the following error correction mechanism.
i) ARQ ii) Hamming codes.
b) Explain the following data communication codes
i) Bar code ii) ASCII code.

8. a) What are the functions of modem with neat diagram?
b) Write short notes on the following:
i) Fax modem
ii) Cable modem

CODE No.:10BT41221

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

COMPUTER GRAPHICS AND MULTI-MEDIA SYSTEMS

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) List and explain the applications of computer graphics.
b) Explain about different display devices.

2. Explain the Bresenham's line drawing algorithm in 2D. Hence give the pixel positions for the line joining the points (4, 4) and (9, 9).

3. a) Find the reflection of a triangle with vertices at (4, 10), (6, 12) and (4, 12) about the line **y = x+5**.
b) Explain 2D Translation and scaling with an example.

4. Explain the Sutherland Cohen line-clipping algorithm. And apply the same algorithm to clip a line with end points (1,7) and (7,5) against a window with boundaries $xw_{min} = 2$, $xw_{max} = 6$, $yw_{min} = 2$, $yw_{max} = 6$.

5. a) Give the steps involved in viewing pipe-line. Explain briefly about each stage of operation.
b) What is meant by 3D object representation? What are two ways of representing an object?

6. a) Suggest with reasons five potential applications of multimedia other than the applications in the field of entertainment and education.
b) Explain various multimedia interface standards.

7. a) What are the advantages and disadvantages of lossless compression? Compare and contrast these with lossy compression schemes.
b) How does the video animation differ from full-motion video?

8. a) Explain about the steps involved in creating hypermedia messages.
b) Explain the Integrated document measurement.

DCODE No.:10BT41301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

CONTROL SYSTEMS

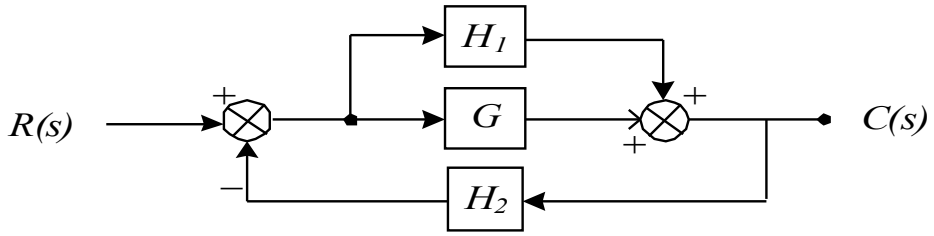
[Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the effect of feedback on parameter variation.
b) Discuss the mathematical modeling of fundamental components of mechanical rotational systems.

2. a) Explain how a transfer function can be obtained using Mason's gain formulae.
b) Obtain transfer function of the following block diagram.



3. a) Explain the significance of a steady state error and error constants.
b) Find the Impulse response of a second order system whose transfer function is $G(s) = \frac{9}{(s^2 + 4s + a)}$.

4. Consider the open-loop transfer function of a unity feedback control system

$$G(S) = \frac{K(S+2)}{S(S+4)(S+6)}$$

Using Routh criterion, find the range of values of K that corresponds to a stable system. Note that K is a positive real constant.

5. Draw the Bode plot of the system whose open-loop transfer function is given by

$$G(S)H(S) = \frac{K}{S(1+S)(1+0.1S)(1+0.02S)}$$

Determine the value of K for the gain margin of 10 db.

6. a) What is the significance of polar plot?

b) Sketch the Nyquist plot for the open loop system = $\frac{s+2}{(s+1)(s-1)}$.

7. a) List out the characteristics of lag compensator.

b) Design a phase lead compensator for the system shown in Fig.1 to satisfy the following specifications.

i) The phase margin of the system $\geq 45^{\circ}$

ii) Steady state error for a unit ramp input $\leq 1/15$

iii) The gain cross over frequency of the system must be less than 7.5 rad/sec.

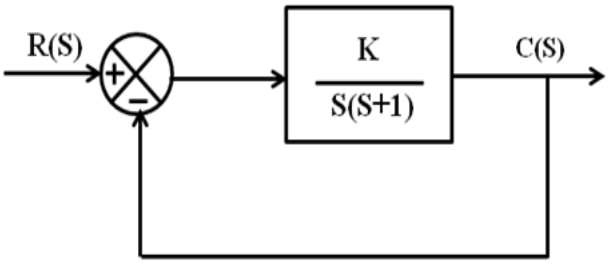


Fig.1

8. a) Define the terms state vector and state portrait.

b) Determine the controllability and observability using Kalman's test for the system described by

$$A = \begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ 0 & -2 & -3 \end{bmatrix}, \qquad B = \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix}, \qquad C = \begin{bmatrix} 10 & 0 & 0 \end{bmatrix}$$

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CODE No.:10BT50501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

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 are the differences between *Big*-O notation and *Little*-o notation? Explain with suitable examples.
b) Derive the time complexity of the below pseudocode:

```
temp=1
repeat
        for i=1 to n
        temp = temp + 1;
        n = n/2;
until n <= 1
```

2. a) Write Greedy algorithm to generate shortest path.
b) If p1/w1 p2/w2..... pn/wn, prove that knapsack generates an optimal solution to the given instance of the knapsack problem.

3. a) Explain the general method of Divide and Conquer.
b) Explain merge sort algorithm using Divide and Conquer.

4. a) Define time complexity. Describe different notations used to represent the complexities of algorithm
b) Derive the function $\mathbf{f(n) = 12n^2+6n \text{ is } 0(n^3)}$ and $\mathbf{w(n)}$.

5. a) Explain about Cook's theorem.
b) Explain the strategy to prove that a problem is NP hard.

6. Write the procedure of backtracking approach to solve a problem with the help of graph coloring problem.

7. Write in detail about FIFO branch and bound solution.

8. a) Explain the classes of NP-hard and NP-complete.
b) Write a nondeterministic Knapsack algorithm.

CODE No.:10BT50502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

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) What is memory segmentation? Explain different memory segments of 8086 microprocessor.
b) Explain different data definition assembler directives of 8086 microprocessor.

2. a) Write an 8086 assembly language program to convert a 16 bit binary number to a BCD number.
b) Give the instruction sequence that compares the first 20 bytes beginning at STRG 1with the first ten bytes beginning at STRG 2 and branches to MATCH if they are equal, otherwise continues in sequence.

3. a) List the pins of 8086 which have different functions in maximum mode and minimum mode and explain their functions.
b) Explain the maximum mode operation of 8086 microprocessor with a block diagram.

4. a) With a neat internal block diagram, explain the working of 8255 PPI.
b) Discuss about mode 1 operation of 8255 with relevant configuration diagrams.

5. a) Discuss briefly about 8259A system connections and cascading
b) Write short notes on BIOS interrupt functions.

6. a) Draw and explain the architecture of 8251 USART.
b) Explain mode word, command word and status word formats of 8251 USART.

7. a) Explain the protected address mode of 80386.
b) Enlist the features of RISC processors.

8. a) Discuss briefly about external data memory of 8051.
b) Briefly explain about Input/Output ports of 8051.

CODE No.:10BT50504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

OPERATING SYSTEMS

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain different services of an operating system.
   b) Discuss about time sharing and multiprocessor systems.

2. a) What is Process Control Block (PCB)? Explain it with neat sketch.
   b) What is the difference between process and program? Explain the state diagram of the processes in an operating system.

3. a) Write Peterson algorithm for 2 process synchronization to critical section problem.
   b) Explain about monitors with example.

4. a) What is resource allocation graph? How resource allocation graph can be used in the context of deadlocks.
   b) How deadlocks can be prevented considering the four necessary conditions?

5. a) Write about internal and external fragmentation.
   b) Explain any three page replacement algorithms.

6. a) What are the possible structures for directory? Discuss them in detail.
   b) Explain about file attribute and operations.

7. a) How stable storage is implemented.
   b) What are the services provided by the kernel I/O sub system.

8. a) Explain the principles of protection.
   b) Explain about security problem and program threat.

CODE No.:10BT60501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

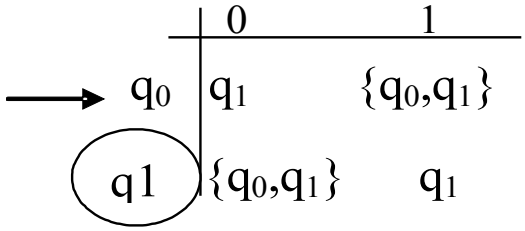
THEORY OF COMPUTATION

[Information Technology]

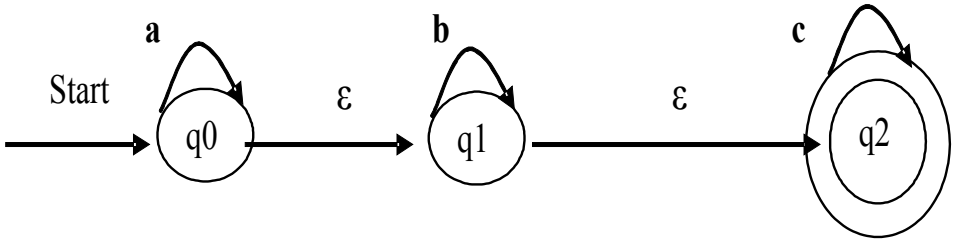
Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) State and prove Kleene's theorem.
b) Define NFA, DFA formally; convert the following NFA into DFA.



2. a) Convert the following NFA **with-ε** into NFA **without-ε**.



b) Draw FA recognizing the corresponding language for the following expression.
i) `1(11+10)*+0(10+01)*`
ii) `(001+101)*(11)*`

3. a) State the steps to convert a regular expression to NFA with an example.
b) Describe, in the English language, the sets represented by the following regular expressions:
i) `a(a+b)*ab`
ii) `a*b + b*a`

4. a) Find CFG with no useless symbols equivalent to.
S→AB/CA
B→BC/AB
A→a
C→aB/b
b) Briefly explain Greibach normal forms for CFG's.

5. a) If L_1 is a CFL and L_2 is a RL then $L_1 \cap L_2$ is a CFL prove it.
b) Let G be the grammar with productions.
S→AACD
A→aAb/Λ
C→aC/a
D→aDA/bDb/ Λ convert into Chomsky normal form.
c) Explain Simplified forms and Normal forms.

6. a) Construct a PDA a equivalent to the following CFG.
S→0BB
B→0S/1S/0 Test whether 010^{4} is in N(A)
b) Find the nature of grammar and find the equivalent in the following cases.
i) **S→saSb[abS]Λ**
ii) **S→abSb[aaS]Λ**

7. a) Explain polynomial time using Kruskal's Algorithm.
b) Explain non-deterministic polynomial time using Travelling salesman problem.

8. What is Universal language? Explain the undecidable problem in Universal Turing Machine.

CODE No.:10BT3BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2016

PROBABILITY AND STATISTICS

[Civil Engineering, Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) If A and B are two events such that B $\subset$ A, show that, P(A) $\geq$ P(B).
b) If A and B are independent events, show that, $\overline{A}$ and $\overline{B}$ are also independent.

2. a) It has been found that 2% of the tools produced by a certain machine are defective. Find the probability that in a sample of 4 chosen at random:
i) none is defective
ii) one is defective
iii) P($1 < x < 3$)
b) The mean weight of 500 male students at a certain college is 151 lb and the standard deviation is 15 lb. Assuming the weights are normally distributed, find how many students weigh between 120 and 155 lb.

3. a) Compute the co efficient of correlation between X and Y using the following data

X	65	67	66	67	68	69	70	72
Y	67	65	68	68	72	72	69	71

b) The two regression equations of the variable X and Y are
X= 19.13-0.87 Y and Y = 11.64-0.50 X
Find (i) mean of X's (ii) Mean of Y's (iii) The correlation coefficient between X and Y.

4. a) What is meant by sampling? What are the reasons of sampling?
b) Suppose we have a population of size 5, consisting of: 6, 8, 10, 12 and 14, taking random samples of size 2 without replacement. Find the mean and variance of the population construct the sampling distribution of the sample mean and also find its mean and variance.

5. Explain the test of significance for a sample proportion. Twenty people were attached by a disease and only 18 survived. Will you reject the hypotheses that the survival rate, if attacked by this disease, is 85% in favor of the hypothesis that it is more at 5% level?

6. Random samples of 400 men and 600 women were asked whether they would like to have a flyover near their residence. 200 men and 325 women were in favour of the proposal. Test the hypotheses that proportions of men and women in favour of the proposal, are same against they are not at 5% level.

7. a) Explain clearly the basis and working of Control Charts for mean and range. What are the basic assumptions and uses of $\overline{X}$ and R charts.
b) Explain the estimation of σ from the mean range of samples of constant size drawn during a continuous production process. What are the other methods of estimating σ ?

8. a) A super market has two girls attending to sales at the counters. If the service time for

each customer is exponential with mean 4 min and if people arrive in Poisson fashion at the rate of 10 per hour,

i) What is the probability that a customer has to wait for a service?

ii) What is the expected percentage of idle time for each girl?

iii) If the customer has to wait in the queue, what is the expected length of his waiting time?

b) A bank plans to open a single server drive-in banking facility at a certain centre. It is estimated that 20 customers will arrive each hour on average. If on average, it requires 2 minutes to process a customer's transaction, determine;

i) the operation of time that the system will be idle.

ii) on the average, how long a customer will have to wait before reaching the server.

iii) the fraction of customers who will have to wait.

CODE No.:10BT3BS02

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2016
ENVIRONMENTAL SCIENCES

[Civil Engineering, 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) Write the role of Hydrosphere in shaping the biosphere.
b) Write an essay on the role of Public in environmental protection.

2. a) Write an essay on Natural Resources.
b) Discuss the pattern of Global food production and its consumption.

3. a) Explain role of producers, consumers and decomposers in an ecosystem.
b) Explain the components and functions of a Forest ecosystem.

4. a) Write note on Hot spots of biodiversity in India.
b) Explain the in-situ and ex-situ conservation of biodiversity.

5. a) Name the different types of air pollutants. Explain the characteristics and biochemical effects of air pollutants.
b) Write a small essay about Disaster Management.

6. a) Write the various sources of water pollution and its control measures.
b) Write an essay about the effects of Thermal pollution.

7. a) What is meant by population stabilization? Discuss family welfare and family planning program in Indian context.
b) Discuss objectives and elements of value education. How can the same be achieved?

8. Explain the following:
i) AIDS
ii) Prepare a field report of the onsite of a Marine ecosystem.

CODE No.:10BT4EC01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2016

OPTIMIZATION TECHNIQUES

[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 difference between linear and nonlinear programming problems?
b) What is separable programming problem?

2. a) Find the output Q which maximizes profit Z given by the relationship:
$\mathbf{Z = 5000+1200\ Q-Q^2}$
b) Using the Lagrangian multiplier method,
Minimize $\mathbf{f=k\ x^{-1} y^{-2}}$; subject to $\mathbf{g = x^2 + y^2 - a^2}$.

3. Solve the following by simplex method
Maximize $F = x_1 + 2x_2 + x_3$
Subject to
$2x_1 + x_2 - x_3 \leq 2$
$-2x_1 + x_2 - 5x_3 \geq -6$
$4x_1 + x_2 + x_3 \leq 6$
$x_1 \geq 0, x_2 \geq 0, x_3 \geq 0$

4. State various steps involved in the North-west corner rule and use it to obtain initial basic feasible solution to the following transportation problem.

	D	E	F	G	Available
A	11	13	17	14	250
B	16	18	14	10	300
C	21	24	13	10	400
Requirement	200	225	275	250	

5. Find the minimum of the function $f = x^5 - 5x^3 - 20x + 5$ by Fibonacci search in the interval (0,5).

6. Minimize $\mathbf{f(x_1\ x_2)} = x_1 - x_2 + 2x_1^2 + 2x_1x_2 + x_2^2$ from the starting point $X_1 = \begin{bmatrix} 0 \\ 0 \end{bmatrix}$ using Cauchy method.

7. a) What are the characteristics of constrained nonlinear programming problem?
b) Define the basic approach of penalty function method. What is SUMT.

8. Solve the following LP problem by Dynamic Programming:
Maximize $\mathbf{f(x_1, x_2) = 10x_1 + 8x_2}$
Subject to $\mathbf{2x_1 + x_2 \leq 25,\ 3x_1 + 2x_2 \leq 45,\ x_2 \leq 10,\quad x_1 \geq 0,\ x_2 \geq 0.}$

CODE No.:10BT30121

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2016

FLUID MECHANICS AND HYDRAULIC MACHINERY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Distinguish between manometers and mechanical gauges. What are the different types of mechanical pressure gauges?
b) A simple manometer is used to measure the pressure of oil (sp.gr. = 0.8) flowing in a pipe line. Its right limb is open to the atmosphere and left limb is connected to the pipe. The centre of the pipe is 9 cm below the level of mercury (sp.gr.13.6) in the right limb. If the difference of mercury level in the two limbs is 15 cm, determine the absolute pressure of the oil in the pipe in N/cm^2 .

2. State and Prove Bernoulli's Theorem.

3. a) What is a Pitot-tube? How will you determine the velocity at any point with the help of Pitot-tube?
b) A 30 cm x 15 cm venturimeter is inserted in vertical pipe carrying water, flowing in the upward direction. A differential mercury-manometer connected to the inlet and throat gives a reading of 30 cm. Find the discharge. Take $C_d = 0.98$.

4. a) Differentiate between the force exerted by a jet on a single vertical moving flat plate and series of curved moving plates.
b) Find the force exerted by a jet of water of diameter 10 mm on a stationary flat plate, when the jet strikes the plate normally with a velocity of 30 m/s.

5. a) Explain a pumped storage plant with a neat sketch.
b) The following data is available for a hydro power plant:
Available head = 150 m, catchment area = 2200 sq.km, annual average rainfall = 150 cm, turbine efficiency = 84%, generator efficiency = 92%, percolation and evaporation losses = 18%.
Determine the following:
i) Power generated
ii) Suggest the type of turbine to be used if runner speed is to be kept below 240 rpm.

6. a) Explain the construction and working of Kaplan turbine.
b) A Francis turbine operates under a head of 30 m consuming 5 litres per sec running at a speed of 1200 rpm. What will be the flow rate and expected speed if the head drops to 29 m.

7. Define the specific speed of a turbine. Derive an expression for the specific speed. What is the significance of the specific speed?

8. a) Explain the classification and working of a reciprocating pump.
b) What is multistage centrifugal pump and describe it in series and in parallel.

CODE No.:10BT40101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2016

STRUCTURAL ANALYSIS - I

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Show that on any two orthogonal planes the sum of normal stresses is same in a strained body.
b) Determine the principal stresses and maximum shear stress, inclination of corresponding planes of a strained body shown in Fig.1.

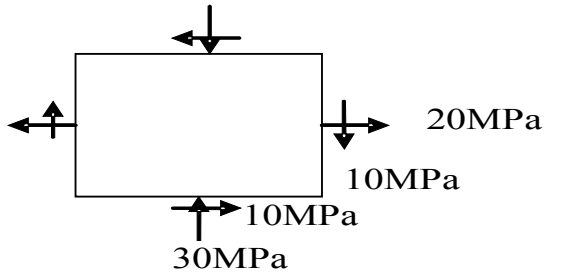


Fig.1

2. Find the deflections at points C and D for a beam loaded as shown in Fig.2, using Macaulay's method. EI is constant.

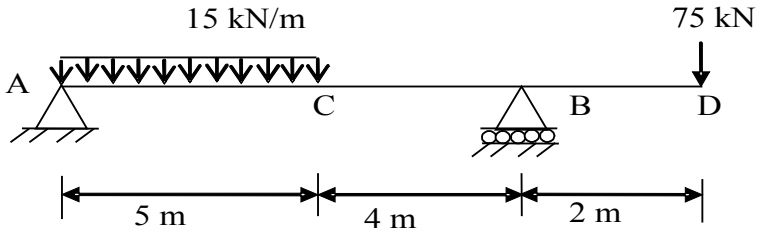


Fig.2Fig.2

3. a) State and prove Moment area theorem I.
b) Obtain expression for the deflection at the mid span of a simply supported beam subjected to point load at 1/4th span. Use moment area theorems.

4. 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 $E_{\text{cast iron}}$ = 107 GPa and Rankine's constant = 1/1650 for both ends pinned case and the crushing strength of the material as 565 Mpa.

5. According to the theory of maximum shear stress, determine the diameter of a bolt which is subjected to an axial pull of 9 kN together with a transverse shear force of 4.5 kN. Elastic limit in tension is 225 N/mm^2, factor of safety = 3 and Poisson's ratio = 0.3.

6. A beam of rectangular section 180 mm wide and 300 mm deep is used over a simply supported span of 6.3 m to support two concentrated loads of 6 kN each at 2 m from either support. The plane of loads makes an angle of 34^{o} with the vertical plane of symmetry. Find the direction of the neutral axis and the maximum bending stresses in the beam.

7. Analyse the fixed beam shown in Fig.3 and draw shear force and bending moment diagrams. Find the distance of the points of contra-flexure from supports.

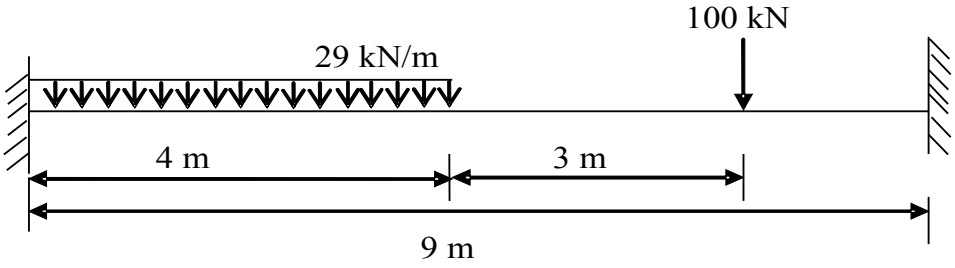


Fig.3 Fig.4

8. A three span continuous beam ABCD is having equal spans of 'l' each. It carries a uniformly distributed load w/unit length over the entire beam. The beam is freely supported on all the supports, which are at the same level. Draw Shear force and Bending moment diagrams for the beam.

CODE No.:10BT40102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2016

FLUID MECHANICS - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is meant by boundary layer? Why does it increase with distance from the upstream edge?
b) Define the terms: Boundary layer thickness, Drag, Lift and Momentum thickness.
c) What do you mean by boundary layer separation? What is the effect of pressure gradient on boundary layer separation?

2. A 8m. wide channel conveys 15 m^3/sec of water at a depth of 1.2m.
Calculate : i) Specific energy of the flowing water.
ii) Critical depth, critical velocity and minimum specific energy.

3. Derive the differential equation for steady gradually varied flow in open channels and list the assumptions.

4. a) Prove that in the case of a jet striking a series of flat plates fitted to periphery of a wheel, efficiency is maximum when jet velocity is twice that of plate.
b) A square metal plate of 10 mm thick and 200 x 200 mm size is hung such that it can swing freely about upper horizontal edge. A horizontal jet of water of 20 mm diameter strikes the plate perpendicularly at 50 mm below the upper edge and keeps the plate steadily inclined 30^0 to the vertical. Find the velocity of the jet if the specific weight of the metal is 75 kN/m^3.

5. An inward flow turbine (reaction turbine with radial discharge) with an overall efficiency of 80% is required to develop 150 kW. The head is 8 m; peripheral velocity of the wheel is $0.96\sqrt{2gH}$; the radial velocity of the flow is $0.36\sqrt{2gH}$. The wheel is to make 150 r.p.m and the hydraulic losses in the turbine are 22% of the available energy. Determine:
i) the angle of the guide blade at inlet,
ii) the wheel vane angle at inlet,
iii) the diameter of the wheel
iv) the width of the wheel at inlet.

6. a) Define specific speed of a turbine. Show that Pelton wheel is a low specific speed turbine.
b) A turbine develops 9 MW when running at 12 r.p.m. The head on the turbine is 32 m. If the head acting on the turbine is reduced to 24 m, determine the percentage change in the speed and power developed.

7. a) Define specific speed of a Centrifugal pump. Derive an expression for the specific speed of a Centrifugal pump.
b) The outer diameter of an impeller of a centrifugal pump is 400mm and outlet width is 50mm. The pump is running at 800 r.p.m. and is working against a total head of 15m. The vane angle at outlet is 40^o and manometric efficiency is 75% . Determine :
i) velocity of flow at outlet,
ii) velocity of water leaving the vane,
iii) discharge.

8. The water turbine of a hydel storage scheme has an output of 7500kW, when working under a net head of 25m and with an overall efficiency of 85%. The inflow in the reservoir during a year is as given below:

Month	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Inflow in 10^6 m^3	105	111	93	84	75	90	123	93	96	102	103	99

Find

i) the minimum capacity of reservoir to satisfy the uniform demand of water

ii) the total quantity of water wasted during the year.

Use analytical method. Assume that the reservoir is full at the beginning of January.

CODE No.:10BT40103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May – 2016

REINFORCED CEMENT CONCRETE STRUCTURES - I

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) From first principles, derive the expression for 'Moment of Resistance of a balanced section' for a 'singly reinforced beam' as per working stress method.
b) Determine the safe udl (uniformly distributed load), a cantilever beam of 2 m can carry in addition to a concentrated load of 4 kN at it's free end. The beam of size 230 mm × 450 mm. It is provided with 4 bars of 16 mm diameter as tension reinforcement. Assume M 20 concrete and Fe 415 grade steel. Use 'working stress method'. Assume moderate exposure condition.

2. a) Derive the expression for 'Moment of Resistance' for an under-reinforced rectangular section from first principles.
b) Calculate the 'balanced percentage of steel' for M25 concrete and Fe 415 grade steel from first principles.

3. a) Find the design constants in Limit state method for M20 grade concrete and Fe 415 grade steel.
b) Determine the ultimate moment of resistance of the T- beam section with effective width of flange 1050mm,width of rib 250mm,effective depth of the beam 540mm, thickness of flange 120mm and area of steel of 2250mm^2.Use M20 grade concrete and Fe 415 grade steel.

4. A continuous beam with simple supports has two spans each 5.7 m c/c. The beam is subjected to a characteristic dead load of 20 kN/m and characteristic live load of 25 kN/m. Design the beam and draw the reinforcement detailing.

5. a) A cantilever beam having a width of 200 mm and effective depth 300 mm supports a uniformly distributed load and is reinforced with 4 bars of 16mm diameter. If the factored total load is 80 kN, calculate the maximum local bond stress and the anchorage length required.
b) A beam of rectangular section in a multistory frame is 250 mm wide and 500 mm deep. The section is subjected to a factored B.M. of 55 kN.m and torsional moment of 30 kN.m together with an ultimate shear force of 40 kN. Using M 20 grade concrete and Fe 415 grade steel design suitable reinforcements in the section assuming an effective cover of 50 mm in the depth and width directions.

6. a) Design a reinforced concrete column for an axial load of 2500 kN. Use M20 grade concrete and Fe 415 grade steel. Effective column height is 5m.
b) Design a square isolated footing of uniform thickness for a reinforced concrete square column of size 500mm transmitting an axial service load of 2700 kN. The safe bearing capacity of the soil at the site is 160kN/m^2. Use M20 grade concrete and Fe 415 grade steel.

7. a) Briefly explain the design of one way slab as per IS code provisions.

b) The floor slab of a room with internal dimensions of 5.5m **x** 4m is to carry a live load of 2kN/m² and dead load due to flooring, finishing and partitions of 1.5kN/m². Design the slab if it is simply supported on all four edges when the corners are held down. Use M20 grade concrete and Fe 415 grade steel.

8. a) Briefly explain the Short and Long term deflections of R.C.beams.

b) A T-beam section has the following data:

Effective width of flange	= 1600 mm
Thickness of flange	= 120 mm
Width of rib	= 300 mm
Overall depth	= 600 mm

Main reinforcement consists of 8 bars of 20mm diameter. Determine the short term deflection if it is subjected to a total service load of 40 kN/m, when used as a simply supported beam of span 6m. Adopt M20 grade concrete and Fe 415 grade steel.

CODE No.:10BT40104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2016

CONSTRUCTION, PLANNING AND PROJECT MANAGEMENT

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) With the help of sketches, explain different types of rubble mansonry.
b) Define shallow foundations and give different types of shallow foundations along with their necessity.

2. a) Describe the method of construction of an Arch.
b) Describe the 'Half turn stairs'.

3. a) Explain the pre and post construction methods for termite proofing.
b) Enumerate the general requirements of buildings for safety against fire.

4. a) Explain the structure, merits and demerits of different types of organizations.
b) Explain the recruitment process and training policy.

5. a) Explain about resource smoothing and resource leveling. Discuss the functions of material management departments.
b) Give the importance of construction equipment and in detail give the classification of construction equipment.

6. a) What are the shortcomings of bar charts? How are these removed?
b) Distinguish between milestone chart and a bar chart. How can the milestone chart can be developed into a network.

7. a) Explain the Elements of Network.
b) Explain the planning for network construction.

8. From the data of table given, prepare the network diagram, decide the completion period and complete the Critical Path Method schedule:

Activity Item	Duration in Days	Activities immediately	
		Preceding	Following
A	3	None	B,C
B	2	A	D,E
C	3	A	E
D	5	B	E
E	6	D,C	F,G
F	5	D,E	None
G	4	E	None

CODE No.:10BT40201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2016

NETWORK ANALYSIS AND SYNTHESIS

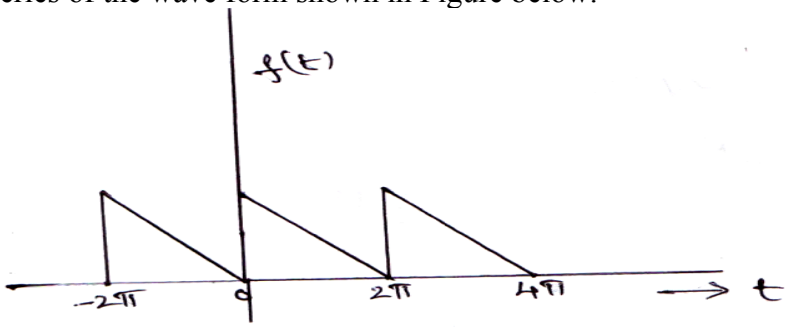
[Electrical and Electronics Engineering]

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

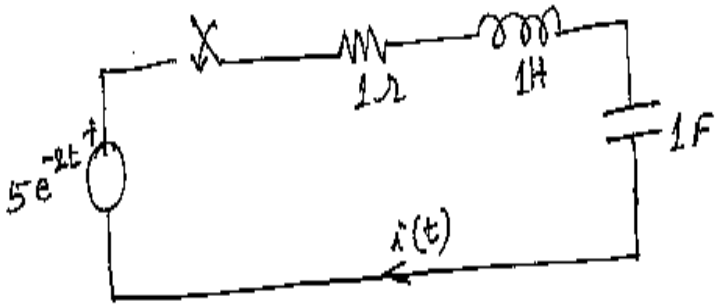
Answer any FIVE questions
All questions carry equal marks

1. a) Explain the terms Graph, Tree and a Cut-set of a network with suitable example.
b) Explain the method of obtaining Tie-set matrix of a network.

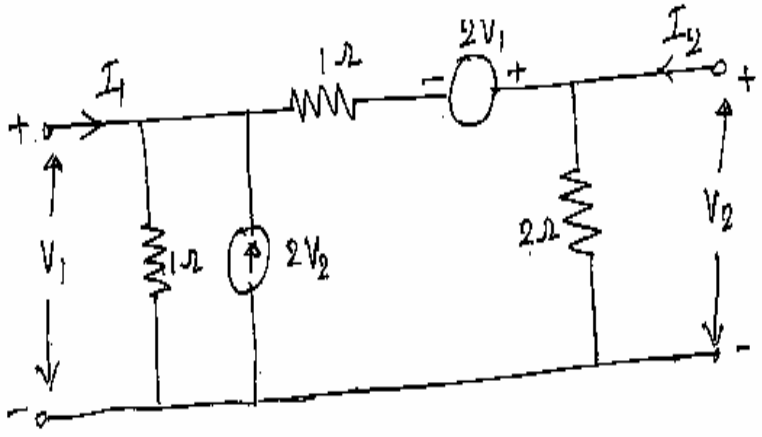
2. Find the Fourier series of the wave form shown in Figure below.



3. Determine the current i(t) in the network shown figure below, using Laplace transform method.

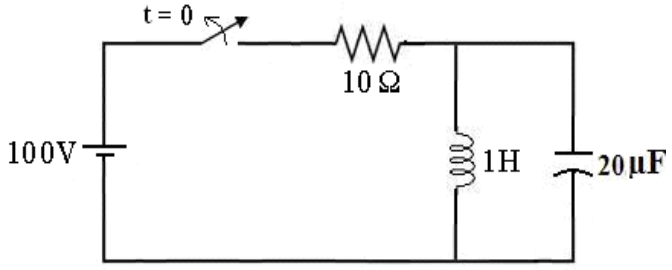


4. Determine Y and Z parameters for the network shown below in the figure.

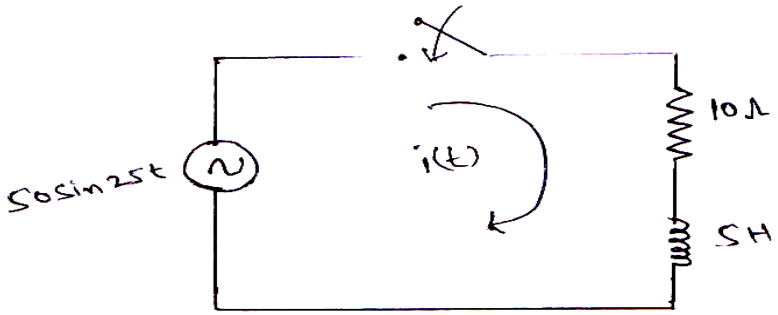


5. a) Derive the equation for the transient current i(t) in a series RLC circuit excited by a step input of V volts, at time t = 0. Assume zero initial conditions.

b) In the circuit shown below, the switch is initially in closed position for a long time and opened at time t = 0. Find the current in the inductor for t > 0, using Laplace transform technique.

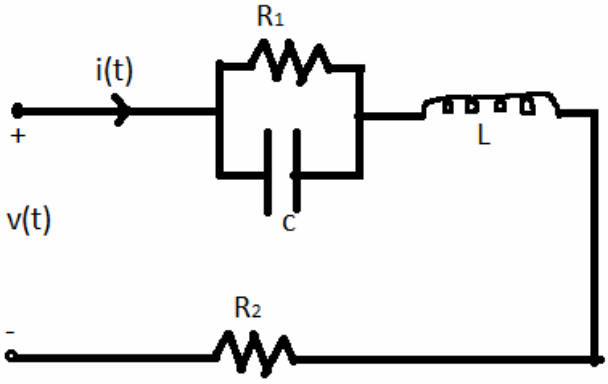


6. The circuit shown bellow figure consists of series RL circuit elements. The sin-wave is applied to the circuit when the switch is closed at t = 0. Determine the current i(t).



7. a) Explain determinants and co-factors for determining network function.

b) Find $\frac{V_o(s)}{V_i(s)}$ for the network shown in figure below.



8. Explain the LC network synthesis of first foster form.

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CODE No.:10BT40202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2016

ELECTRO MAGNETIC FIELDS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) State and prove Gauss law in integral form.
b) Determine $\overline{D}$ at (4, 0, 3) if there is a point charge -5π MC at (4, 0,0) and a line charge 3πMC/m along *y* axis.

2. a) Explain in detail about the method of images and discuss its applications in the study of electromagnetic problems.
b) Calculate the electric field intensity at a point (1,1,1) by four identical point charges of 3 nano coulomb(nC) located at (1,1,0), (-1,1,0), (-1,-1,0) and (1,-1,0).

3. a) Derive the expression for the potential gradient and explain the concept of potential gradient.
b) What happens when a solid conductor is placed in an electric field? Derive the boundary relations at the boundary between a conductor and dielectric.

4. A non-magnetic material having $\in_r = 8.5, \sigma = \frac{10^{-4} S}{m}$. Find the loss tangent, attenuation constant, phase constant, intrinsic impedance for a wave having a frequency of 2.5 MHz. Assume the material to be a good dielectric.

5. a) Explain how Gauss law can be applied to magnetic field.
b) Determine the current density associated with the magnetic field:

$$\overline{H} = 4r\overline{a}_r + 5\overline{a}_\theta + Cos\theta\,\overline{a}_\phi \; A/m$$

6. a) Define the terms magnetic force and torque and explain the relationship between them.
b) Explain about the conditions that a magnetic field should satisfy at the boundary of two magnetic materials.

7. a) Bring out the analogy between electric and magnetic circuits.
b) Determine the inductance of coaxial transmission line with conducting cylinders by assuming suitable data.

8. Write four Maxwell's equations in
i) point form ii) integral form for time varying fields.
Explain the significance of each equation.

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CODE No.:10BT40203

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May – 2016

GENERATION OF ELECTRICAL POWER

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Define the terms conventional and non-conventional energy sources. Discuss about future scope of non-conventional energy sources in India.

2. Discuss about different types of hydro electric power stations.

3. a) What are the types of steam turbines?
b) Explain various types of fuels used in thermal power plants.

4. a) Discuss various factors which affect the selection of site for a nuclear power plant.
b) What are the various control rods used in a nuclear reactor? Describe the function of each of them.

5. a) Compare a.c. and d.c. power distribution.
b) Explain Kelvin's law.

6. Discuss in detail about various types of bus bar arrangements in substations.

7. a) Explain about the desirable characteristics of a tariff.
b) A 500 KVA distribution transformer costs Rs.50,000 and has a useful life of 25 years. If the salvage value is Rs.5,000/- and annual compound interest rate is 8%, determine the value of transformer at the end of 10 years using sinking fund method.

8. a) Explain the disadvantages of low power factor.
b) A consumer has an average demand of 400 kW at a pf of 0.8 lag and annual load factor of 50%. The tariff is Rs.50/kVA of maximum demand per annum plus 5 paise/kwhr. If the power factor is improved to 0.95 lag by installing phase advancing equipment, calculate the net annual saving in electricity charges.

CODE No.:10BT40204

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2016

ELECTRICAL MEASUREMENTS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the different effects used in producing deflecting torque in an analog instrument. Write examples which these effects are used.
b) A ballistic galvanometer gives a first swing of 60° for a discharge of 1000 μC. Find the quantity of electricity to produce
i) a swing of 90° in the instrument
ii) a spot deflection of 20 mm on a scale 1 m away.

2. a) Explain the working of an attraction type moving iron instrument.
b) Derive the expressions for ratio and phase angle errors in a current transformer.

3. a) Explain the construction and operation of single phase dynamometer wattmeter.
b) The inductive reactance of the pressure coil circuit of a dynamometer wattmeter is 0.35 percent of its resistance at a normal frequency and the capacitance is negligible. Calculate the correction factor and percentage error due to reactance for load having 0.5 power factor lagging.

4. a) Explain about the errors and compensations in an induction type energy meter.
b) A 5A, 230V single phase energy meter on full load unity power factor test makes 60 revolutions in 360 seconds. If the normal disc speed is 520 revolutions per Kwh, what is the percentage error?

5. a) Explain the principle, construction and operation of a DC Crompton's potentiometer.
b) Explain about the calibration of Ammeter and Voltmeter of a DC Crompton Potentiometer.

6. a) What is the importance of the value of earth's resistance? What are the factors which influence its value?
b) Describe the fall of potential method for measurement of earth resistance.

7. a) Derive the balancing condition for a Schering bridge for measuring capacitance and dissipation factor of an unknown capacitor with help of necessary phasor diagram.
b) Calculate the unknown inductance and resistance measured by Hay's bridge. The bridge elements at the balancing conditions are, $R_1 = 5.1\ K\Omega$, $C_1 = 2\ \mu F$, $R_2 = 7.9\ K\Omega$, $R_3 = 790\ K\Omega$. The supply angular frequency is 1000 rad/sec

8. a) Explain the construction and working of a Weston type frequency meter.
b) Write short notes on RVDT.

CODE No.:10BT40205

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2016

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) Derive the e.m.f. equation of a single phase transformer.
b) A single phase transformer has 500 turns on the primary and 1200 turns on the secondary winding. The cross-sectional area of the core is 80 sq.cm. The primary is connected to 500 Volts, 50 Hz supply. Calculate the peak flux density and voltage induced in the secondary.

2. a) With neat sketch explain the sumpner's test on single phase transformer.
b) In a 25 KVA, 2000/200 V, single phase transformer, the iron and full load copper losses are 350 Watts and 400 Watts respectively. Calculate the efficiency at unit power factor on i) full load ii) half full load.

3. a) Explain how OC test and SC tests will be conducted on a single phase transformer.
b) What is an auto transformer? Explain.

4. What are the various three-phase transformer connections. Explain the Open-delta connection in detail.

5. a) Explain clearly how the revolving field is produced in three phase induction motors.
b) What is meant by slip in induction motors? Obtain a relation between frequency of rotor and stator currents, slip and rotor e.m.f and rotor reactance.

6. a) Determine the rotor e.m.f and reactance under running conditions.
b) A 6 pole induction motor is fed from 3 - phase, 50 Hz supply. If the frequency of rotor emf at full load is 2 Hz. Find full load slip and speed.

7. Explain the Blocked rotor test on a 3-phase induction motor with a neat circuit diagram.

8. a) Explain the rotor resistance control method of induction motor speed control stating its merits and demerits.
b) What is the effect of stator poles on the speed of induction motors? Explain the method of speed control by changing stator poles.

CODE No.:10BT40221

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2016

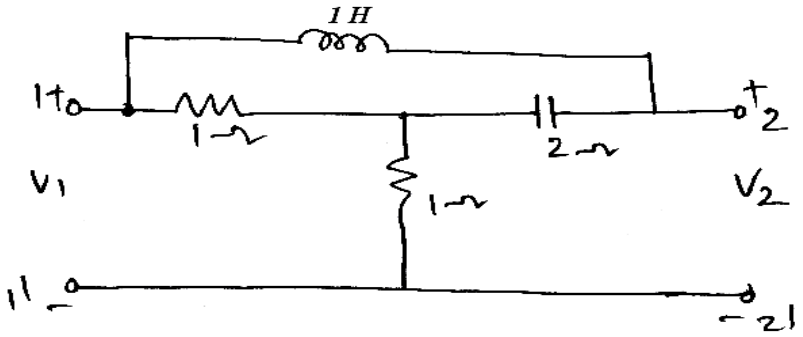
PRINCIPLES OF ELECTRICAL ENGINEERING

[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) Find the relationship between Z and H parameters.
b) For the following network shown in figure below, determine Y and Z parameters.



2. a) What is filter and explain the classifications of filters.
b) Design constant - K Low pass filter.

3. Design a ∏ - attenuator pad to give an attenuation of 20 dB. The characteristic resistance is 500 Ω.

4. a) Derive the e.m.f. equation of a DC generator.
b) With neat sketches, explain the armature voltage control method of DC shunt motor.

5. With neat sketches, explain the measurement of power in three phase systems using two watt meter method and also derive $\mathbf{\tan\theta = (w_2-w_1)/(w_2+w_1)}$.

6. a) Derive the e.m.f. equation of transformer.
b) A 15 KVA 2400/240 V, 60 Hz transformer has a magnetic core of 50 cm^2 cross section and a mean length of 66.7 cm. The application of 2400 causes magnetic field intensity of 450 AT/m (RMS) and a maximum flux density of 1.5 T.
Determine:
i) The turn's ratio.
ii) The numbers of turns in each winding.

7. a) Explain principle of operation of Induction motor.
b) Derive the e.m.f. equation of an alternator.

8. Explain the principle of operation of i) synchro's ii) A.C. tachometer.

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CODE No.:10BT40301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2016

KINEMATICS OF MACHINERY

[Mechanical Engineering]

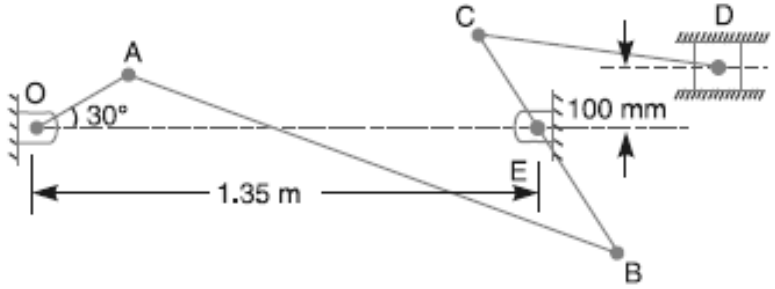
Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the terms : Lower pair, Higher pair, Kinematic chain and Inversion
b) Sketch and explain any two inversions of a double slider crank chain.

2. a) Enumerate straight line mechanisms. Why are they classified into exact and approximate straight line mechanisms?
b) Give a neat sketch of the straight line motion 'Hart mechanism.' Prove that it produces an exact straight line motion.

3. A mechanism, as shown in Fig. has the following dimensions: OA = 200 mm; AB = 1.5 m; BC = 600 mm; CD = 500 mm and BE = 400 mm. Locate all the instantaneous centres. If crank OA rotates uniformly at 120 r.p.m. clockwise,
find i) the velocity of B, C and D,
ii) the angular velocity of the links AB, BC and CD.



4. a) What is double hook joint? Explain.
b) Draw a neat sketch of Universal coupling and explain.

5. a) Derive an expression for Maximum pressure angle to cause jamming of follower rod in guides.
b) Derive an expression for displacement, velocity and acceleration for flat face follower of a circular cam when the contact is on circular nose. Illustrate by graphs how displacement, velocity and acceleration vary from instant to instant during ascent and decent.

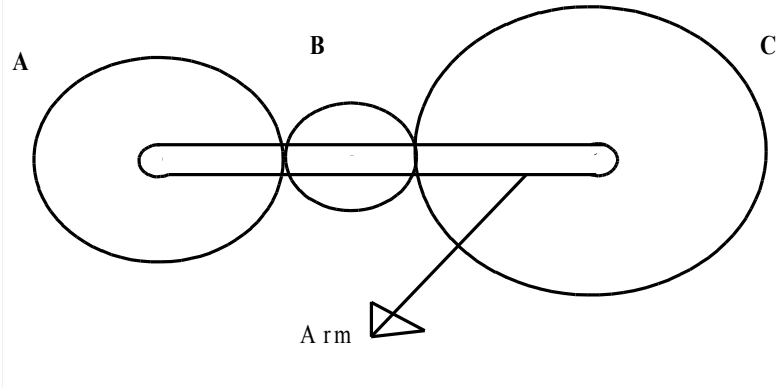
6. a) Derive an expression for length of path of contact.
b) Two gear wheels mesh externally to give a velocity ratio of 3:1. The teeth are of involute form; module=6mm, addendum = one module, Pressure angle = 20^0 . The pinion rotates at 90 r.p.m.
Find i) Number of teeth on each wheel to avoid interference
ii) The length of path of contact.

7. a) Obtain an expression for the length of a belt in a cross belt drive.
b) What are different types of chains? Explain the power transmission chains with neat sketches.

8. In an epicyclic gear train shown in Fig. The number of teeth on wheels A, B and C are 42, 26 and 56 respectively. If the arm rotates at 600 r.p.m CW, find

i) Speed of wheel C when A is fixed and

ii) Speed of wheel A when C is fixed.



CODE No.:10BT40302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2016

THERMAL ENGINEERING - I

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the different processes involved in dual combustion cycles.
b) An Ericsson cycle operating with an ideal regenerator works between 1100 k and 288 K. The pressure at the beginning of isothermal compression is 1.013 bar.
Determine i) The compressor and turbine work per kg of air, and
ii) The cycle efficiency.

2. a) Discuss the effect of dissociation on engine temperature and power with neat sketches.
b) A petrol engine with a compression ratio of 7 used a mixture of iso-octane and hexane as fuel. The pressure and temperature at the beginning of the compression process is 1 bar and 55 °C respectively. If the fuel-air mixture is 20% rich and the maximum pressure developed is 115 bar then evaluate the composition of the mixture in percentage weight.
Take C_v = 0.717 kJ/kg K, CV_{hexane} = 43 MJ/kg,
$CV_{iso\text{-}octane}$ = 42 MJ/kg and $pV^{1.31}$ is constant for the expansion and compression processes.

3. a) Describe with a suitable sketch the normal combustion chamber phenomenon in S.I engines.
b) What is the reason for ignition lag? Discuss the effects of various engine variables on ignition lag.

4. a) How C.I engine combustions are classified?
b) Describe giving suitable sketches, the methods of producing air movement in C.I engines. Discuss their relative advantages and disadvantages.

5. Define the following terms:
i) Indicated Power
ii) Volumetric efficiency
iii) Indicated mean effective pressure
iv) Brake thermal efficiency

6. a) Explain the Morse test method of determination of frictional power.
b) Explain the volumetric type flow meter for measurement of fuel consumption with a neat sketch.

7. An eight-stage, axial flow compressor takes in air at a temperature of 20^0C at the rate of 3kg/s. The pressure ratio is 6 and the isentropic efficiency is 0.89. The compression process is adiabatic. The stages of the compressor are similar and operate with 50 % reaction. In each stage the mean blade speed is 180m/s and the uniform axial velocity of flow of the air is 105m/s. Determine the power to the air and direction of the air at entry to and exit from the rotor and stator blades. Assume air to be perfect gas.

8. a) Explain with the help of P-V diagram the loss due to variation of specific heats.
b) Why the air cycle approximation gives very high estimate of engine performance.

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CODE No.:10BT40303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2016

MANUFACTURING TECHNOLOGY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain any four types of patterns commonly used with neat sketches.
b) Describe the types of moulds with suitable examples and their applications.

2. a) Explain centrifugal casting process with a neat sketch. What are its merits and demerits?
b) What are different types of risers? Explain them.

3. a) What are different elements in a typical gating system?
b) What is the significance of shrinkage in the production of castings?

4. a) List and explain the destructive tests applied in welding.
b) What are the essential steps in brazing operation? Explain.

5. Describe classification of rolling mills with neat sketches.

6. a) Explain the principle of forging and write a brief note on the allowances that are normally provided in forging.
b) Show the process of forward and backward extrusion by schematic sketches. Give two examples of components produced by extrusion.

7. a) What principles are normally considered good practice in the design of drop forgings?
b) How are tubes extruded? Explain with a sketch.

8. a) With a neat sketch, discuss the working principle of water jet machining process.
b) Discuss the effects of grain size and jet velocity on working accuracy and rate of metal removal in abrasive jet machining.

CODE No.:10BT40401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2016

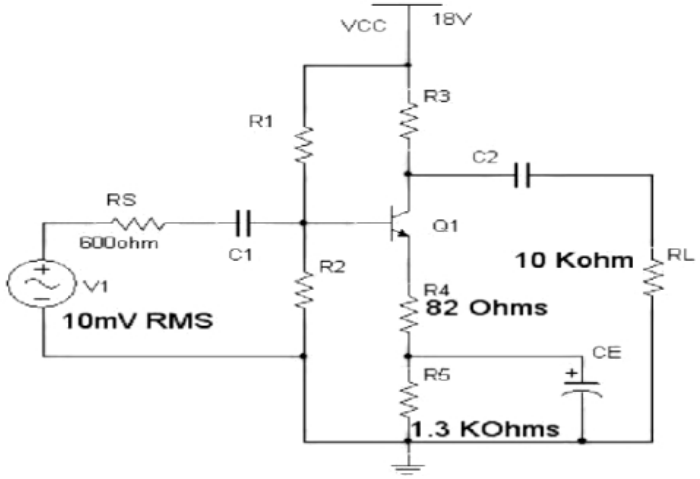
ELECTRONIC CIRCUIT ANALYSIS

[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. For the amplifier circuit shown with partially unbypassed emitter resistance, calculate the voltage gain with R_4 in place and with R_4 shorted. Consider h_{ie} = 1.1KΩ, h_{fe} = 100, h_{re} & h_{oe} are negligibly small. Assume R_1 and R_2 to be 100KΩ and 22 KΩ respectively.



2. Derive expressions for overall Voltage gain and Current gain of two stage RC coupled amplifier.

3. a) Explain about CE Hybrid - Pi model.
b) Discuss the concept of Gain - Bandwidth product.

4. a) Why common drain is called a source follower? Explain.
b) A FET amplifier consists of two identical stages. The total effective shunt capacitance across each stage is same and is equal to 20pF. The 3dB band width of the overall amplifier is 10MHz. If FET used in each stage has gm = 10mA/V, calculate the overall gain of the amplifier in dB in mid frequency range.

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 25 KHz. What will be the required feedback ratio?

6. Derive the expression for the frequency of oscillations and the minimum gain required for sustained oscillations of RC phase shift oscillator.

7. Explain with a diagram the working of transformer coupled class-A power amplifier.

8. a) Discuss the applications of tuned amplifiers.
b) Explain the need for stagger tuned amplifier.

CODE No.:10BT40402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2016

PULSE AND DIGITAL CIRCUITS

[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) A 10 Hz square wave is fed to an amplifier. Calculate and plot the output waveform under the following conditions:
the lower 3-dB frequency is i) 0.3 Hz ii) 3.0 Hz iii) 30 Hz
b) Write a brief note on Ringing circuit.

2. Draw the basic circuit diagram of a DC restorer circuit and explain its operation. Sketch the output waveform for a sinusoidal input signal.

3. a) Explain with relevant diagrams the various transistor switching times.
b) Design a transistor switch with the following specifications.
V_{CC} =10V; V_{BB} = 6V; I_C (sat) = 8mA; (h_{FE}) min = 30.

4. Draw the circuit diagram of collector to base coupled monostable multivibrator and explain the operation of it with the help of the wave forms both and collector and bases of both the transistors.

5. Define the terms slope error, displacement error and transmission error. How are they related for an exponential sweep circuit? Derive the relation between them.

6. a) Briefly explain unidirectional diode gate and write the advantages and disadvantages of this sampling gate.
b) Draw the block diagram of sampling scope and explain each block in brief.

7. a) Explain the synchronization of a sweep circuit with symmetrical signals.
b) Explain the stability of relaxation dividers.

8. a) Draw and explain the circuit of Two-Input TTL NAND gate.
b) With the help of circuit diagram and truth table, explain the working of an RTL NOR gate.

CODE No.:10BT40403

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2016

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) Define electric scalar potential.
b) Obtain the expression for electric flux density on the axis of a uniform charged disc.

2. a) Differentiate between Conduction current and Convection current.
b) Prove that $\nabla.J=0$ for static fields.

3. a) What is the relation between magnetic flux density and magnetic field intensity?
b) Determine the Ampere's law of force between two current carrying circuits on each other.

4. a) State Faraday's law.
b) Derive the integral form of the Maxwell's equation for both electric and magnetic fields from point form of the Maxwell's equation.

5. a) Explain the wave propagation in a good dielectric medium.
b) A parallel polarized wave propagates from air in to a dielectric at Brewster angle of 65^0 find the relative dielectric constant of the medium.

6. a) State and Prove Poynting Theorem.
b) Derive the Equations for ***E*** and ***H*** for a uniform plane wave incident normally on a perfect conductor.

7. a) Explain the conditions which are used for minimum attenuation in transmission lines.
b) For a cable it is decided to provide lumped loading. The primary constants of the cable are R = 40 ohm/km , L = 1mH/km ,G = 1μmho/km, C = 0.05μF/km. Find the new value of the inductance required to achieve distortion less condition .By what factor inductance is required to be raised.

8. Write short notes on the following
i) Types of Transmission lines
ii) Quarter wave transformer
iii) Reflection coefficient and VSWR in transmission lines.

CODE No.:10BT40404

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2016

SWITCHING THEORY AND LOGIC DESIGN

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the rules for excess-3 addition? Add the two decimal numbers 125 and 568 in excess-3 code.
b) Perform subtraction with the following unsigned decimal numbers by taking 10's complement of the subtrahend. Verify the result.
i) 20-100 ii) 1500- 1200
c) Write brief notes on any error correcting code.

2. a) What are basic theorems of Boolean algebra?
b) Realize AND and OR gates using universal gates.
c) Simplify the following Boolean functions to minimum number of literals.
i) X(X'+Y) ii) (X'+Y)(X+Y)
d) Find the complement of the function: F_1 = X'YZ' + X'Y'Z

3. a) Determine the prime implicants of the function F(A,B,C,D) = ∑(0,2,4,5,6,7,8,10,13,15).
b) Draw a NAND logic diagram that implements the compliment of the following function. F(A,B,C,D) = ∑m(0,1,2,3,4,8,9,12)

4. a) Implement the full adder using Decoder and OR gates
b) Design an n-bit parallel adder using full adder.

5. a) Compare PROM, PLA and PAL.
b) Design BCD to excess-3 code converter and implement using suitable PLA.

6. a) Design a 4-bit binary synchronous counter with D flip-flops.
b) Explain the operation of SR latch with NOR and NAND gates.

7. A sequential circuit has two JK flip-flops A and B, two inputs x and y and one output z. The flip-flop input equations circuit output equations are

$$J_A = Bx + B'y' \quad J_B = A'x \quad K_A = B'xy' \quad K_B = A + xy' \quad z = Ax'y' + Bx'y'$$

i) Draw the logic diagram of the circuit.
ii) Tabulate the state table.
iii) Derive the state equations for A and B.

8. a) Explain salient features of ASM chart.
b) Draw the state diagram and ASM chart for 2-bit up-down counter having mode control input M = 0 down counting, M = 1 up counting. The circuit should generate output whenever count becomes minimum or maximum.

CODE No.:10BT40421

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2016

ANALOG ELECTRONIC CIRCUITS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Draw the h-Parameter equivalent circuit of CC and CE Configuration and what are the typical values of h- Parameters for a transistor in CE and CB Configuration.
b) Draw the circuit diagram of CE amplifiers with emitter resistance and obtain its equivalent hybrid model and derive expressions for A_i, A_v , R_i with approximate analysis. What is the role of CC and CE?

2. a) Explain the effect of coupling capacitor and emitter bypass capacitor on low frequency response of BJT amplifiers.
b) Write short notes on Gain Bandwidth product.

3. a) Classify different types of feedback amplifiers with suitable diagrams. Discuss about general characteristics of negative feedback amplifiers.
b) Derive the expressions for input and output resistances with feedback in case of series feedback amplifiers.

4. a) What are the factors which affect the stability of an oscillator?
b) State briefly and explain the Barkhausen's criteria for oscillations.

5. a) Determine the power handling capacity of for a 60W power transistor rated at 25ºC if derating is required above 25 ºC at a case temperature of 100 ºC. The derating factor is 0.25W/ ºC.
b) Derive the expression for efficiency in case of a transformer coupled class-A power amplifier.

6. Explain the operation of a transistor clipper discussing the role played by
i) Cut - in region ii) input resistance.
Make analysis of input and output wave forms.

7. a) Explain how transistor acts as switch? Draw base and collector waveforms and indicate all the time intervals.
b) Design the Transistor switch [Inverter] for the following specifications.
V_{in}= ±3V square wave, V_{CC}=10V,I_C =1mA, h_{FE}=50.Assume S_i transistor.

8. a) Draw the circuit diagram of a fixed bias binary with speed up capacitors and explain it.
b) What is a monostable multivibrator? With the help of a neat circuit diagram explain the principal of operation of a monostable multivibrator and derive an expression for pulse width.

CODE No.:10BT40501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2016

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) Briefly explain the various functional units of a computer.
b) Assume numbers are represented in 8-bit 2's complement representation. Show that calculation of the following
i) 6+13 ii) -6 + 13 iii) 6 - 13 iv) -6 -13

2. a) What are the phases of an Instruction Cycle? Draw the flow chart for initial configuration of Instruction Cycle.
b) Give brief description about the Memory Stack. Convert 6x7 + 8x9 into postfix and evaluate using Stack.

3. a) Write short note on nano programming.
b) With neat diagram, explain the design of control unit.

4. a) Discuss in detail about Vector processing.
b) Write about data hazards and instruction hazards.

5. a) What are the various types of ROM? Explain briefly.
b) Write short notes on the following.
i) I/O versus Memory bus
ii) Isolated I/O versus Memory mapped I/O
iii) Hand Shaking

6. a) Briefly explain the PCI.
b) Describe the Serial communication Protocol RS 232.

7. Write about the following Inter connection structures
a) Multiport memory
b) Multistage switching network

8. Explain RISC Architecture.

CODE No.:10BT40502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May – 2016

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 in detail the following principles of object oriented programming.
   i) Data encapsulation and data hiding
   ii) Polymorphism

   b) What is linkage specification and also explain its need.

2. a) Differentiate between method overloading and method overriding.
   b) Explain about runtime polymorphism with example.

3. a) Explain about the acess specifiers: public, private and protected.
   b) Explain the getchar() and append() methods of StringBuffer class.

4. a) Write a Java program to illustrate the usage of super to call super class constructors.
   b) Define an interface. Write a program which illustrates the way to design and implement an interface.

5. a) What are the use of terminate () and unexpected functions? Explain with a program. How to use multiple catch functions inside a program? Explain with a program.
   b) Write all blocks of exception handling? Explain with a program.

6. a) With the help of an example, explain multithreading by extending Thread class.
   b) Explain how to create an applet and how to pass parameters to an applet.

7. a) How to handle events in JAVA with suitable example?
   b) Explain components labels, canvas, scrollbars, text, and checkbox.

8. a) Explain about MVC architecture.
   b) Explain container class with an example.

CODE No.:10BT40503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2016

PRINCIPLES OF PROGRAMMING LANGUAGES

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the objectives of programming languages?
b) Discuss the principles of imperative and functional programming paradigms.

2. a) With suitable examples, explain type equivalence.
b) Explain the difference between static and dynamic scope rules with example.

3. a) What is short-circuit evaluation?
b) Name a language that always does short-circuit evaluation of Boolean expressions. Name one that never does it. Name one in which the programmer is allowed to choose.

4. a) Explain the scope and lifetime of variables, use examples to demonstrate when they would coincide and when they don't.
b) In what way, co-routines differ from conventional sub programs?

5. a) Explain in detail about Binary Semaphores.
b) Explain data abstraction in Ada 95.

6. a) Discuss the different data structures in Prolog.
b) Explain the concept of unification in Prolog with an example.

7. a) What are the features of functional programming languages? Explain.
b) Explain the concept of delayed evaluation in Lisp.

8. Write short notes on,
i) Procedural Abstraction.
ii) Module Library.
iii) Variables.

CODE No.:10BT41001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2016

ELECTRICAL AND ELECTRONIC MEASUREMENTS

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain, the principle and operation of a moving iron instrument with a neat diagram and why this meter is suitable for both **ac** and **dc** measurements?

b) The law of deflection of a moving iron ammeter is given by $I = 4\theta^n$ ampere, where 'θ' is the deflection in radians and 'n' is a constant. The self inductance when the meter current is zero is 10mH. The spring constant is 0.16 Nm/radian.
i) Determine the expression for self inductance of the meter as a function of θ and n.
ii) With n = 0.75, calculate the meter current and the deflection that corresponds to a self inductance of 60 mH.

2. a) What is Ohmmeter and list out the types of Ohmmeters? Explain any one of them with a simple schematic diagram.

b) In the measurement of resistance by the voltmeter- ammeter method, the readings on the ammeter and voltmeter with the voltmeter connected across the resistance are 2A and 180V respectively. The readings on the ammeter and voltmeters with the voltmeter connected across the whole circuit i.e combination of ammeter and unknown resistance in series are 2A and 188.6V respectively. Calculate
i) the true value the resistance
ii) the percentage error as the quotient of the readings in both of the cases.
The resistance of the ammeter and voltmeter are 0.01 ohm and 2000 ohms respectively.

3. a) Derive the torque equation of a Single Phase Electrodynamometer type Wattmeter. How is it that a uniform scale is obtained when the scale span is about -45° to 45° of the position where there is zero mutual inductance between fixed and moving coils?

b) Describe the constructional details of a Single Phase Induction Energy Meter. Explain why the phase of shunt flux is made exactly in quadrature with that of applied voltage so as to produce a deflecting torque exactly proportional to power.

4. a) Discuss the procedure involved to measure the medium resistance using Wheatstone's bridge.

b) Explain about the Maxwell's capacitance bridge with the necessary balancing equations.

5. a) What is the difference between true RMS voltmeter and various digital voltmeters?

b) Write a short note on ramp type Digital voltmeter.

6. a) With relevant sketch, discuss how time period is measured.

b) Write a detailed note on Frequency synthesizer.

7. a) Describe the construction and working of a Storage Oscilloscope with necessary diagrams.

b) Draw the block diagram of Vertical Amplifier used in a CRO and explain its working.

8. a) What is the necessity of the recorders? List out the types of recorders and explain any one of them with a neat diagram.

b) Explain with the help of a functional block diagram, the principle of working of an X-Y recorder.

CODE No.:10BT41002

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May – 2016

TRANSDUCERS IN INSTRUMENTATION

[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) Explain the various transducers and write their advantages.
b) Determine the confidence interval that has 50% probability of including the true value of a quantity when the average from *n* measurements is $\hat{\mathbf{y}}_n$ and the variance is $\boldsymbol{\sigma}^2$.

2. a) Define (i) Reproducibility (ii) Repeatability.
b) Derive the equations for time response of a first order system when subjected to unit step input. Draw the response cure and find the steady error in each case.

3. a) Explain the different types of strain gauges with neat diagrams.
b) Describe the construction and working of Resistance Temperature Detector.

4. a) Explain the working principle of synchros with relevant diagrams.
b) Explain in detail about the construction and working principle of LVDT.

5. a) Derive the expression to find the capacitance of a differential capacitor.
b) Explain how the capacitor transducers can be used for measurement of liquid level in the tank.

6. a) Explain the laws of thermocouple.
b) Write briefly about the pyroelectric effect.

7. a) Explain in detail about Chopper amplifier.
b) Explain in detail about balance and deflection measurement in Wheatstone bridge.

8. a) Write short notes on MEMS.
b) Explain absolute encoder using 3-bit BCD code.

CODE No.:10BT41201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2016

DATA COMMUNICATIONS

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) List and briefly explain the four transmission modes.
b) Describe serial and parallel data transmission and explain the advantages and disadvantages of both types of transmissions.

2. a) Define cable attenuation and cross talk.
b) Define optical fibre transmission system. What are the advantages and disadvantages of optical -fibre cables?

3. a) Explain the process of digital commanding.
b) Briefly describe AT&T FDM hierarchy.

4. a) Describe rays and wave fronts and the relation between them.
b) Explain the inverse square law and how it relates to electromagnetic waves.

5. a) Describe the basic operation of cordless telephone.
b) Briefly describe the function of a two-wire to- four wire hybrid set.

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) Write clearly the capabilities, limitations and applicability issues of NRZ and RZ codes.
b) Construct the hamming code for the bit sequence 11100010 and show the process of error correction at the 7^{th} location.

8. a) Describe the three blocks of an asynchronous voice-band modem.
b) Define probability error and Bit rate.

CODE No.:10BT41221

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2016

COMPUTER GRAPHICS AND MULTI-MEDIA SYSTEMS

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the construction of cathode ray tube monitor.
b) Write about overview of graphics systems.
c) Describe any two hard copy devices.

2. Explain the basic concept of midpoint ellipse algorithm. Derive the decision parameter for the algorithm and write down the algorithm steps.

3. a) What is meant by composite transformation and when it is used?
b) Show the composition of two rotations is additive by concatenating the matrix representations for $R(\theta_1)\ R(\theta_2) = R(\theta_1 + \theta_2)$.

4. a) Explain window-to-viewport coordinate transformation.
b) Explain polygon clipping algorithm with a suitable example.

5. a) Write the steps involved in viewing pipe-line. Explain briefly about each stage of operation.
b) Write an algorithm for Bezier surface.

6. a) Describe various building blocks of multimedia systems.
b) Write short notes on MDBMS.

7. a) Explain compression and decompression techniques.
b) Explain storage and retrieval technologies.

8. a) Explain integrated multimedia message stands.
b) Explain the role of each type of server required in a multimedia system and type of storage media that should be used for it.

CODE No.:10BT41301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2016

CONTROL SYSTEMS

[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 is block diagram? Explain the basic components of block diagram.
b) Write the differential equations governing the mechanical system shown in Fig.(a).

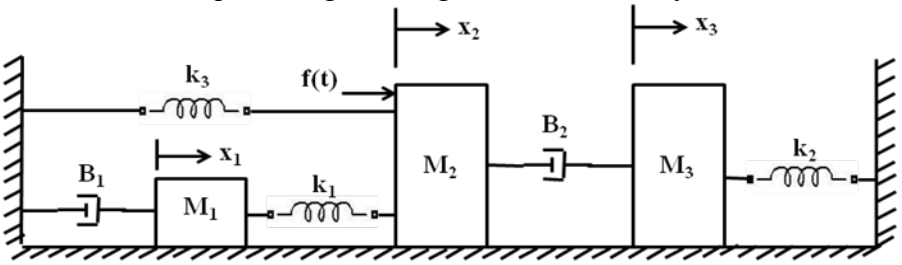
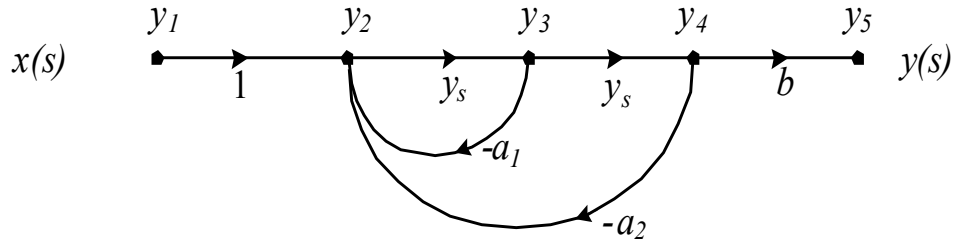


Fig. (a)

2. a) Derive the Transfer function of a separately excited DC servomotor.
b) Obtain transfer function for the following signal flow graph.



3. If $G(s) = \frac{10}{s(s+2)}$; H(s)=1, calculate rise time, peak over shoot for a step input of 12 units.

4. A unity feedback control system has an open-loop transfer function

$$G(S) = \frac{K}{S(S^2 + 4S + 13)}$$

Sketch the root locus plot of the system.

5. a) Explain the frequency domain specifications of a typical system.
b) Explain the general procedure for constructing Bode plots.

6.
a) Determine the maximum value of k which makes the transfer function $G(s) = \frac{k}{s(s^2 + s + 4)}$ is stable.

b) A unity feedback system with $G_C(s) = K$ has $G(s) = \frac{e^{-0.1s}}{(s+4)}$. Select a gain K so that the phase margin of the system is 40^0. Determine the gain margin for the selected gain K

7. a) Determine the transfer function of a lead compensator that will provide a phase lead of 50^0 and gain of 8dB at ω=5rad/sec.
b) Explain the Lag compensator design briefly.

8. a) Define the terms state model and state equations.
b) Explain Kalman's test to assess the controllability and observability properties of a system.

CODE No.:10BT50501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2016

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) Write a greedy algorithm to the Job sequencing with deadlines.
b) Prove that the edge with the smallest weight will be part of every minimum spanning tree.

3. a) Write a pseudo code for a linear time algorithm that generates the optimal Binary search tree from the root table.
b) Find the minimum no of operations required for the following chain matrix multiplication using dynamic programming.
A(30,40) * B(40,5) * C(5,15) * D(15,6).

4. a) Write Greedy algorithm to generate shortest path.
b) Define merging and purging rules of O/1 Knapsack problem.

5. a) Explain about cook's theorem.
b) Explain the strategy to prove that a problem is NP hard.

6. Write a short note on “0-1 knap sack” problem. “0-1 knapsack problem can be solvable by greedy method”- Analyze your answer?

7. a) Write an algorithm to solve the Knapsack problem with the Branch and Bound.
b) Explain the principles of LIFO Branch and Bound.

8. a) What is meant by Halting problem explain with an example?
b) Explain the classes of P and NP.

CODE No.:10BT50502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2016

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) What is memory segmentation? Explain different memory segments of 8086 microprocessor.
b) Explain different data definition assembler directives of 8086 microprocessor.

2. a) Write an assembly program sequence for performing binary division on an n-word number by a one-word number.
b) Discuss various branch instructions of 8086 microprocessor that are useful for relocation.

3. a) With a neat sketch, explain 8237 DMA controller and its operation.
b) Design a decoding logic circuit to interface two 16k x 8 SRAM chips to 8086 starting at address 40000H.

4. Write an ALP to interface a hex keyboard to 8086 using 8255 and draw the interfacing diagram.

5. a) Explain the Interrupt cycle of 8086.
b) What is the difference between hardware interrupt and software interrupt?

6. a) Discuss types of serial communication.
b) Write an 8086 instruction sequence to receive 20 characters using 8251 USART and store them in memory.

7. a) Explain the salient features of 80386 microprocessor.
b) Explain how physical address is obtained from virtual address in protected mode of 80386 microprocessor.

8. a) Discuss briefly about external data memory of 8051.
b) Briefly explain about Input/Output ports of 8051.

CODE No.:10BT50504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2016

OPERATING SYSTEMS

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the services provided by operating systems.
b) Explain the architecture of operating system with neat sketch?.

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. Write in detail about deadlock detection and recovery.

5. Write in detail about memory management techniques paging and segmentation.

6. a) What are the different file attributes and file operations?
b) Compare sequential and direct access methods of file accessing.

7. Explain various types of mass storage structures.

8. a) Discuss about protection and domains of protection.
b) Write about system threats.

CODE No.:10BT60501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC10) Supplementary Examinations May - 2016

THEORY OF COMPUTATION

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain the following with suitable example.
i) Power of an alphabet ii) String Concatenation
iii) Language. iv) Finite Automata for banking process.

2. Explain the following in details.
i) Equivalence between NFA and DFA.
ii) Mealy and Moore machine.

3. a) State and prove the pumping lemma for regular languages.
b) Use PL to prove that the following is not RL.
i) **L={ww/W Є {1,0}*}**
ii) **010*+1(01+11)*11**

4. Perform the following operation for the given grammar.
S→ABC | BaB
A→aA | BaC | aaa
B→bBb | a | D
C → CA | Ac
D →ε
i) Eliminate ε production.
ii) Eliminate any unit production.
iii) Eliminate useless symbols.
iv) Convert to Chomsky Normal Forms

5. a) Write short notes on application of pumping lemma for CFL.
b) Describe a short notes about the push down automata and it's representation.

6. If a Context Free Grammar *G* is language contains at least one string other than ε, then there is a grammar G1 in Chomsky Normal form, such that L(G1)= L(G)-{ε}.

7. Find the following decision problems with unrestricted grammars are solvable not explain your answer in detail:
i) Given a grammar 'G' and a string 'W'. Does 'G' generate W or not?
ii) Give two grammars G_1 and G_2. Do they generate the same language or not?

8. a) Differentiate NP-hard and NP-complete problems with examples.
b) How can we say a problem is undesirable? List out some undecidable problems.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular Examinations November - 2015

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
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 + 2 y + 2z = b, x + 5y + 3z = 9 will have (i) unique solution
(ii) infinite number of solutions and (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 7 Marks
$x + \log_{10} x = 3.375$, 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 $x^3 - 2x - 5 = 0$ by the method of false 7 Marks
position, 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) Use Runge-Kutta method to find y when $x = 1.2$ in the step of **0.2,** given 7 Marks

that $dy/dx = x^2 + y^2$ and $y(1) = 1.5$.

b) The following data gives the velocity of a particle for 20 seconds at an interval of 5 seconds. Find the initial acceleration using the entire data. 7 Marks

Time t (sec):	0	5	10	15	20
Velocity v(m/sec):	0	3	14	69	228

(OR)

6 a) Using modified Euler method, find an approximate value y when $x = 0.2$, given that $dy/dx = x+y$ and $y=1$ when $x=0$. Taking step size $h=0.1$. 7 Marks

b) The velocity v(km/min) of a moped which starts from rest is given at fixed intervals of time t (min) as follows: 7 Marks

t:	2	4	6	8	10	12	14	16	18	20
v:	10	18	25	29	32	20	11	5	2	0

Estimate approximately the distance covered in 20 minutes.

UNIT-IV

7 a) Obtain the Fourier series for $f(x) = \pi x$, in $0 \le x \le 2$. 7 Marks

b) Find the Fourier sine transform of $\frac{x}{a^2 + x^2}, x \ge 0$. 7 Marks

(OR)

8 a) Find the half range cosine series for $f(x) = x(2-x)$ in $0 \le x \le 2$ and hence find the sum of the series $\frac{1}{1^2} - \frac{1}{3^2} + \frac{1}{5^2} - \ldots\ldots$ 7 Marks

b) Using suitable integral representation, show that 7 Marks

$$\int_0^\infty \frac{\cos \lambda x}{x^2 + 1} dx = \frac{\pi}{2} e^{-\lambda}, \lambda \ge 0$$

UNIT-V

9 a) Form the partial differential equation by eliminating arbitrary function from $xyz = f(x + y + z)$. 7 Marks

b) Solve by the method of separation of variables $\frac{\partial^z u}{\partial x^z} = \frac{\partial u}{\partial y} + 2u$ satisfying $u = 0$ and $\frac{\partial u}{\partial x} = e^{2y}$, when $x=0$, for all y. 7 Marks

(OR)

10 A tightly stretched string of length ℓ has its ends fastened at $x = 0$ and $x = \ell$. The midpoint of the string is then taken to a height 'h' and then released from rest in that position. Find the lateral displacement of a point of the string at any time 't' from the instance of release. 14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular Examinations November - 2015

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 show that $\left|\frac{1}{2}\right. = \sqrt{\pi}$. 7 Marks

b) Show that when n is a positive integer, $\mathbf{J_n(x)}$ is the coefficient of $\mathbf{z^n}$ in the expansion of $e^{x(z-\frac{1}{z})/2}$ is ascending and descending powers of z. 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 $\left[J_{\frac{1}{2}}(x)\right]^2 + \left[J_{-\frac{1}{2}}(x)\right]^2 = \frac{2}{\Pi x}$. 7 Marks

UNIT-II

3 a) Prove that the function f(z) defined by 7 Marks

$f(z) = \frac{(x^3 - y^3) + i(x^3 + y^3)}{x^2 + y^2}, z \neq 0 \; and \; f(0) = 0$ is continues and the Cauchy's- Riemann equations are satisfied at the origin.

b) Determine a, b, c. d so that the function 7 Marks
f ((z) = (x^2+a xy+by^2) + i (cx^2 +dxy+y^2) is analytic.

(OR)

4 a) If f**(z) = u +iv** is an analytic function , find **f(z)** if **u+ v** = $\frac{x}{x^2 + y^2}$ when **f(1)=1**. 7 Marks

b) Determine the analytic function whose real part is $\mathbf{e^x(x \cos y - y \sin y)}$. 7 Marks

UNIT-III

5 a) Evaluate $\int_c (x-2y)dx+(y^2-x^2)dy$ where ***c*** is the boundary of the first quadrant of the circle $x^2+y^2=4$. 7 Marks

b) Verify Cauchy's theorem for the function $\int_c (z+1)dz$ where ***c*** is the boundary of the square whose vertices at the points ***z=0, z=1, z=1+i, z=i.*** 7 Marks

(OR)

6 a) Expand $f(z)=\frac{1}{z^2-z-6}$ about $z=1$. 7 Marks

b) Evaluate $\int_c \frac{z^2-2z-2}{(z^2+1)^2 z}$ where c is $|z-i|=\frac{1}{2}$ 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 |=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 ***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 = Cosz***. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular Examinations November - 2015

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 Expectation. 7 Marks

b) The probability density function of a continuous random variable 'X' is given by 7 Marks

$f(x) = A\,x(2-x)$, where $0 \le x \le 2$ find β_2 and β_1 and 'A' is constant.

(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) If Mean = 70, S.D = 16 find 7 Marks

i) $p(38 \le x \le 46)$

ii) $p(82 \le x \le 94)$

iii) $p(62 \le x \le 86)$

b) Derive mean and variance of the Poisson Distribution. 7 Marks

(OR)

4 a) Find the probability that at most 5 defective components will be found in a lot of 200. If experience shows that 2% of such components are defective. Also find the probability of more than five defective components. 7 Marks

b) Explain briefly Area properties of normal curve. 7 Marks

UNIT-III

5 a) Explain briefly the following content 7 Marks

i) Statistical quality control

ii) Specification limits, X, R, P and **np**.

b) Calculation co-efficient of correlation between x and y. 7 Marks

x	9	8	7	6	5	4	3	2	1
y	15	16	14	13	11	12	10	8	9

(OR)

6 a) Obtain the rank correlation co- efficient for the following data. 7 Marks

X	68	64	75	50	64	80	75	40	55	64
Y	62	58	68	45	81	60	68	48	50	70

b) Derive angle between two Regression lines. 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) A random sample from a company's very extensive files shows that the orders for a certain kind of machinery were filled, respectively in 10, 12, 19, 14, 15, 18, 11 and 13 days. Use the level of significance a = 0.01 to test the claim that on the average such orders are filled in 10.5 days. Assume normality. 7 Marks

b) The number of automobile accidents per week in a certain community are as follows: 12, 8, 20, 2, 14, 10, 15, 6, 9, 4. Are these frequencies in agreement with the belief that accident conditions were the same during this 10 week period. 7 Marks

(OR)

10 a) In one sample of 10 observations from a normal population, the sum of the squares of the deviations of the sample values from the sample mean is 102.4 and in another sample of 12 observations from another normal population, the sum of the squares of the deviations of the sample values from the sample mean is 120.5. Examine whether the two normal populations have the same variance. 6 Marks

b) On the basis of information given below about the treatment of 200 patients suffering from a disease, state whether the new treatment is comparatively superior to the conventional treatment. 8 Marks

	Favorable	Not Favorable	Total
New	60	30	90
Conventional	40	70	110

CODE No.:14BT3HS01 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular Examinations November - 2015

ENVIRONMENTAL SCIENCES

[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 importance of Environmental Education in understanding the global environmental issues faced by the humankind.	7 Marks
	b)	Discuss the ill effects of deforestation and explain what you understand by sustainable management of forests.	7 Marks
		(OR)	
2	a)	What are different kinds of mining that are adopted to explore mineral resources? Explain the environmental impacts of mining.	7 Marks
	b)	Discuss the salient features of modern agriculture and the adverse environmental impacts of such practices.	7 Marks

UNIT-II

3		Explain the conservation of Biodiversity and list out five endangered and five endemic species of India.	14 Marks
		(OR)	
4	a)	Write a note on food chain, food web and ecological pyramids.	7 Marks
	b)	Explain the process of Ecological Succession.	7 Marks

UNIT-III

5		Define and classify the Disasters and explain the Disaster Management with latest Case studies.	14 Marks
		(OR)	
6		Describe the sources, effects and control methods of water pollution.	14 Marks

UNIT-IV

7	a)	List the gases responsible for global warming. Explain the possible consequences of green house effect.	7 Marks
	b)	Present salient features of Water Act.	7 Marks
		(OR)	
8	a)	Explain the concept of sustainable development.	7 Marks
	b)	Write a detailed note on waste land reclamation.	7 Marks

UNIT-V

9		Taking population growth trends into consideration, explain the reasons for growth of population. Also highlight the methods adopted for controlling growth of population.	14 Marks
		(OR)	
10		Write notes on: i) Environment and human health. ii) Role of information technology in addressing environmental problems.	14 Marks

CODE No.:14BT30101 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular Examinations November - 2015

ENGINEERING GEOLOGY

[Civil 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 Geology in Civil Engineering.	14 Marks
	(OR)	
2	Explain the aspects of weathering and its significance in reservoirs.	14 Marks

UNIT-II

3	Describe the importance of sedimentary rocks in civil engineering.	14 Marks
	(OR)	
4	Describe the Doris attrition test and soundness test. How these two test results can be used?	14 Marks

UNIT-III

5	Explain classification of faults and how these are dangerous for the dams and tunnels.	14 Marks
	(OR)	
6	Write about electrical resistivity technique procedure and its applications in Civil Engineering.	14 Marks

UNIT-IV

7	Explain earthquake and its impact on Civil Engineering structures. Suggest best possible earthquake resistant structures.	14 Marks
	(OR)	
8	Describe Darcy's law with neat illustration. Explain how this useful in understanding ground water movement in various geological features.	14 Marks

UNIT-V

9	What are the geological investigations required to the reservoir?	14 Marks
	(OR)	
10	What are the geo-engineering investigations required for tunnels?	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular Examinations November - 2015

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 gun metal rod of 30 mm diameter passes through a steel tube of 50 mm internal and 40 mm external diameter. Nuts on the ends of rod are just tightened. If the temperature of whole assembly is raised by 100^0 C, Find the stresses in the rod and tube. 14 Marks

$\alpha_{gun\ metal} = 18 \times 10^{-6} / {}^0C$, $\alpha_{steel} = 12 \times 10^{-6} / {}^0C$

$E_{gun\ metal} = 0.9 \times 10^5$ MPa , $E_{steel} = 2.1 \times 10^5$ Mpa

(OR)

2 Derive strain energy expression for the following cases: 14 Marks

i) Tapering bar subjected to axial load with end diameters d_1 and d_2.

ii) Prismatic bar hanging under its own weight.

UNIT-II

3 Draw the SF and BM diagrams for the beam shown in the Fig.1. Indicate the position and magnitude of max BM. Is there any point of contra flexure? 14 Marks

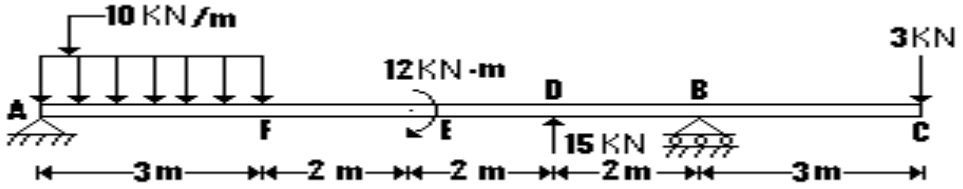
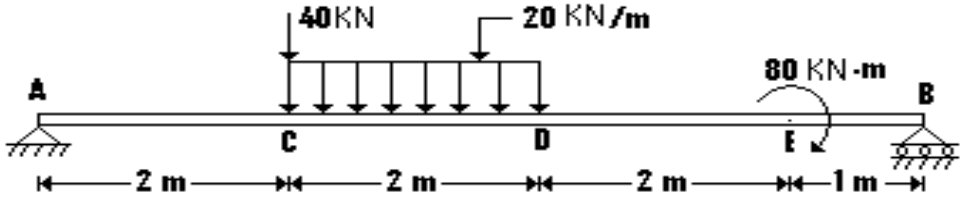


Fig. 1

(OR)

4 Draw the Shear force and bending moment diagrams giving the values at salient points for the simply supported beam. 14 Marks



UNIT-III

5 Determine the allowable superimposed uniformly distributed load on a 4 m span simply supported beam with symmetrical I section consisting of 150 mm x 20 mm flanges and 20 mm x 150 mm web, if the allowable bending stress is 150 MPa and the unit weight of beam material is 78.5 kN/m^3. Find the percentage of bending moment resisted by web and flanges. 14 Marks

(OR)

6 Sketch the variation of shear stress across the depth of a H section of 200 mm x 10 mm verticals and 200 mm x 10 mm horizontal. Flexural shear force action on the section is 100 kN. 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 10 mm. The outer spring has 10 coils of 30 mm mean diameter and 3 mm 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 20 mm. If the radial clearance between the springs is 2 mm 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 150 kW power at 150 r.p.m. The maximum shear stress is limited to 60 MPa the angle of twist is limited to 2.5 degrees in its length of 3 m. Rigidity modulus of steel is 80 GPa 14 Marks

UNIT-V

9 A copper tube 38mm external diameter 35.5 mm internal diameter is closely wound with steel wire 0.75 mm diameter. Stating clearly the assumptions made, estimate the tension at which the wire must have been wound if an internal pressure of 2 N/mm^2 produces a tensile circumferential stress of 6.5 N/mm^2 in the tube. Es=1.6 **x** Ec. 14 Marks

(OR)

10 Derive Lame's equations for the analysis of a thick 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) Regular Examinations November - 2015

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)	With the help of neat sketch, explain one method of burning of bricks in a continuous kiln.	7 Marks
	b)	Write notes on the following: i) Deterioration of stones ii) Preservation of stones by taking precautionary measure during construction.	7 Marks

(OR)

2	a)	Define the term Seasoning of Timber and also explain the various methods of seasoning.	7 Marks
	b)	Explain the various defects in Timber with the help of neat sketches.	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 Hydration of Cement? Explain the various ingredients present in the cement.	14 Marks

(OR)

6		Explain the following types of Cement : i) Ordinary Portland Cement. ii) High Alumina Cement. iii) Sulphate Resisting Cement.	14 Marks

UNIT-IV

7		Define Maturity Concept of Concrete and explain the various factors affecting strength of Concrete.	14 Marks

(OR)

8		Explain how Flexural Strength test is conducted on beams in Laboratory.	14 Marks

UNIT-V

9	a)	What is creep? Draw a sketch showing the typical creep strain-time curve under uniaxial compression for concrete.	7 Marks
	b)	Write about various modulus of elasticity of plain cement concrete. What are the factors affecting modulus of elasticity of concrete?	7 Marks

(OR)

10 Design a concrete mix to be used in structural elements by IS method for following requirements. 14 Marks

i) Characteristic compressive strength at 28 days, f_{ck}	20 N/mm^2
ii) Maximum size of aggregate	20 mm
iii) Shape of coarse aggregate	Angular
iv) Degree of workability desired, compacting factor	0.90
v) Type of exposure	Mild
Test data for concrete making materials	
Specific gravity of cement	3.15
Specific gravity of coarse aggregate	2.60
Specific gravity of fine aggregate	2.60
Water absorption (air dry to saturated surface dry)	
Coarse aggregate, percent	0.5%
Fine aggregate	1.0%
Surface moisture	
Coarse aggregate	Nil
Fine aggregate	2.0%

vi) Compressive Strength of cement at 28 days satisfies the requirement of IS:269-1989

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular Examinations November - 2015

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) What are the pressure measuring devices? Explain the working of an inverted U tube differential manometer. 6 Marks

b) A pipe containing water at 172 kN/m^2 pressure is connected by a differential gauge to another pipe 1.5 m lower than first pipe and containing water at high pressure. If the difference in the heights of the two mercury columns of the gauge is equal to 75 mm, what is the pressure in the lower pipe? Specific gravity of mercury is 13.6. 8 Marks

(OR)

2 a) Define kinematic and dynamic viscosity. What is the effect of temperature on viscosity? Explain. 6 Marks

b) The space between two parallel plates 5mm apart is filled with an oil of relative density 0.9. A force of 2N is required to drag the upper plate of area 900 cm^2 at a constant velocity of 0.8m/s. Assume straight line velocity distribution and calculate the dynamic viscosity and kinematic viscosity. 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 10^2N.s/m^2 is pumped at a rate of 0.02 m^3/s through a 0.15 m diameter 300 m 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 degree with the horizontal and the flow is in upward direction. 14 Marks

UNIT-III

5 a) An orifice meter with orifice diameter 15 cm is inserted in a pipe of 30 cm diameter. The pressure gauges fitted upstream and downstream of the orifice meter give readings of 14.715 N/cm^2 and 9.81 N/cm^2 respectively. Find the rate of flow of water through the pipe in litres/sec. Take Cd=0.60. 8 Marks

b) Derive the expression for computing the discharge through an orifice meter. 6 Marks

(OR)

6 Determine the rate of low of water through a pipe of diameter 20 cm and length 50 m when one end of the pipe is connected to a tank and other end of the pipe is open to the atmosphere. The pipe is horizontal and the height of water in the tank is 4 m above the centre of the pipe. Consider all minor losses and take f = 0.009 in the formula $h_f = 4flv^2/2gD$. 14 Marks

UNIT-IV

7 Determine (i) the pressure gradient, (ii) the shear stress at the two horizontal parallel plates and (iii) the discharge per metre width for the laminar flow of oil with a maximum velocity of 2 m/s between two horizontal parallel fixed plates which are 100 mm apart. 14 Marks

Given μ=2.4525 N s/m^2.

(OR)

8 Explain the terms 'laminar flow' and 'turbulent flow'. Derive an expression for the velocity distribution for viscous flow through a circular pipe. Also sketch the velocity distribution and shear stress distribution across a section of the pipe. 14 Marks

UNIT-V

9 a) Define Reynold's Model Law. 4 Marks

b) A pipe of diameter 1.5 m is required to transport an oil of specific gravity 0.90 and viscosity $3\mathbf{x}10^{-2}$ poise at the rate of 3000 litre/s. Test were conducted on a 15 cm diameter pipe using water at 200 C . Find the velocity and rate of flow in the model. Viscosity of water at 200 C = 0.01 poise. 10 Marks

(OR)

10 a) What is the significance of non- dimensional numbers: Reynolds's number, Froude number and Mach number in the theory of similarity? 7 Marks

b) What is dimensional analysis? How is this analysis related to the theory of similarity? 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular Examinations November - 2015

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 electric 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 continuity equation in integral form and differential form.	7 Marks
	b)	A copper conductor is 1000 ft long and has a circular cross-section with a diameter of 0.8 inch. If there is D.C voltage of 1.2 V between the ends, find ; (i) The current density (ii) The current.	7 Marks
		(OR)	
4	a)	Derive the expression for EFI inside a dielectric material.	7 Marks
	b)	A parallel plate capacitor of 10 cm × 10 cm and d = 1 cm, is charged to a potential of 1KV, with air as the dielectric. i) Find the energy stored ii) The capacitance is now disconnected from the source and a dielectric slab is inserted into the capacitor (ε_r=4). Calculate the energy stored.	7 Marks

UNIT-III

5	a)	Explain about Scalar magnetic potential and Vector magnetic potential.	7 Marks
	b)	A steady current element 10^{-2} a_z A-m is located at the Origin in free space. What is the magnetic field 'B' due to this element at the point (2, 0, 0) m (in rectangular coordinates)?	7 Marks
		(OR)	
6	a)	Write Maxwell's Third equation in Point form and explain.	7 Marks
	b)	Obtain the expression for Magnetic Field Intensity due to a infinite line Current carrying wire by applying Ampere's circuital Law.	7 Marks

UNIT-IV

7	a)	Define Magnetization. Obtain the expression for magnetic flux density in terms of magnetization.	7 Marks
	b)	Derive the boundary conditions at the interface of two different magnetic materials.	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	7 Marks

magnetic energy density.

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

CODE No.:14BT30202 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular Examinations November - 2015

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)	For a singly excited system, derive a relation for magnetic stored energy.	7 Marks
	b)	A doubly excited magnetic field system has self and mutual inductances of coil-1 and coil-2 as given below: $L_{11}=L_{22}=2$ $L_{12}=L_{21}=\text{Cos}\theta$ Where θ is angle between axes of coils. If coil-2 is short circuited when coil-1 carries a current of $I_1 = I_m \text{ Sin } \omega t$ Derive an expression for instantaneous torque as a function of angular position. Evaluate time-average torque at $\theta= 30^0$ and current in coil-1 as 100 Sin 314t.	7 Marks

(OR)

2	a)	What is co-energy? Explain.	4 Marks
	b)	Derive an expression magnetic force developed in a multiple excited translational magnetic system.	10 Marks

UNIT-II

3		Briefly discuss about the armature reaction and its effects on the operation of D.C. Machines. How the armature reaction is minimized?	14 Marks

(OR)

4	a)	Explain the principle of operation of D.C. generator. Why is a commutator and brush arrangement necessary for the operation of a D.C. generator?	7 Marks
	b)	A 4 pole, long-shunt lap- wound generator supplies 25 KW at a terminal voltage of 500 V. The armature resistance is 0.03 ohm, series field resistance is 0.04 ohm and shunt field resistance is 200 ohm. The brush drop may be taken as 1.0 V. Determine the e.m.f. generated. Calculate 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)	Discuss the conditions required for parallel operation of (i) D.C. shunt generators (ii) D.C. series generators	7 Marks
	b)	Two shunt generators are operating in parallel, The e,m,f. induced one machine is 260 V and that of second machine is 270 V. They together supply a load current of 1800 A. If each machine has armature resistance of 0.04 ohm and field resistance of 50 ohms, determine terminal voltage and output of each generator.	7 Marks

(OR)

6	a)	Explain an experimental method to determine critical speed of D.C. generator.	7 Marks
	b)	Sketch the external characteristics of (i) D.C. shunt generator (ii) D.C. compound generator Explain how D.C. compound generator can be operated as level compounding generator.	7 Marks

UNIT-IV

7 a) Derive torque equation of D.C. motor. 7 Marks

b) A series motor drives a fan for which the torque varies as square of the speed. Its resistance between the terminals is 1.2 ohm. On 220 V its runs at 350 r.p.m. and takes 30 A. The speed is to be raised to 450 r.p.m. by increasing the voltage. Find the voltage. Assume that flux varies directly as current. 7 Marks

(OR)

8 a) Discuss various speed control methods of D.C. series motor. 7 Marks

b) A 230 V D.C. shunt motor drives a load at 900 r.p.m. drawing a current of 30 A. The resistance of armature is 0.4 ohm. The torque of load is proportional to speed. Calculate the resistance to inserted into armature circuit to get 600 r.p.m. 7 Marks

UNIT-V

9 a) Draw the circuit diagram of Field's test. How the efficiency of each machine is computed from results of Field's test? Indicate different steps of calculations. 7 Marks

b) A 500 V shunt motor takes 8 A on no-load. The armature and field resistances are 0.2 ohm and 250 ohms respectively. Find the efficiency of D.C. machine: 7 Marks

i) As motor taking 90 A at 500 V.

ii) As generator delivering 90 A at 500 V.

(OR)

10 a) 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

b) Retardation test is conducted on D.C. separately excited machine. The induced voltage falls from 220 V to 190 V in 30 seconds on opening armature circuit and 5 seconds and suddenly connecting armature to load resistance taking 12 A (average). Find the efficiency of D.C. machine when run as motor taking 2A. 7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Regular Examinations November - 2015

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) 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

b) Find the value of applied d.c. voltage for the network, shown in Fig.1. 7 Marks

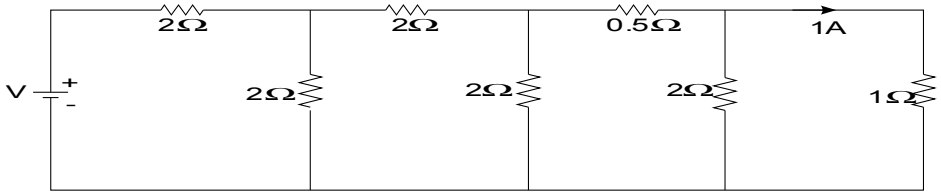

Fig.1.

(OR)

2 a) Three equal resistances are available. Derive; 7 Marks
i) The ratio of the equivalent resistances when they are connected in parallel.
ii) The ratio of the current through each element when they are connected in parallel.

b) Find the voltage across the 2A source which polarities as shown in Fig.2 7 Marks

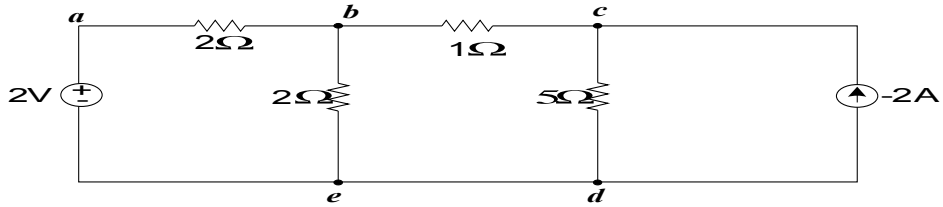

Fig.2

UNIT-II

3 a) Determine the sinusoidal response of parallel RL circuit. 7 Marks

b) Why the r.m.s values of an alternating quantity is more important than its average value. Find the r.m.s value of the resultant current in a conductor which carries simultaneously sinusoidal alternating current with a maximum value of 15A and direct current of 15A, by deriving necessary expressions. 7 Marks

(OR)

4 a) What is locus diagram? Draw and explain current locus diagram for a series RL circuit with fixed resistance and deriving necessary expressions. 7 Marks

b) Show that the given circuit shown in Fig.3 resonates at supply frequency. 7 Marks

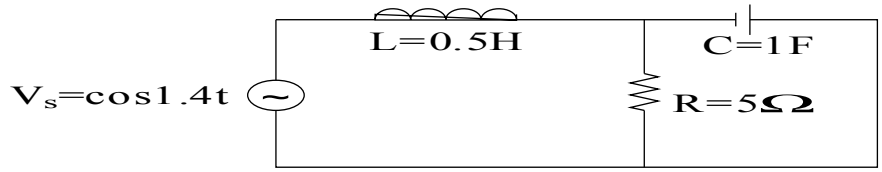

Fig.3

UNIT-III

5 a) A three phase balanced system supplies 110 V to a delta connected load whose phase impedances are (3.89+j 7.98) Ω. Determine (i) line currents (ii) phase currents and (iii) total input power and draw the phasor diagram. 7 Marks

b) Three inductive coils having per phase resistance of 54Ω and inductive reactance of 35 Ω are connected in star across 415 V, 3-phase, 50 Hz supply. Calculate the ratings of three capacitors which must be connected in star to the supply in order to bring the overall p.f. to unity. 7 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 three phase induction motor 100 kVA at 0.6 p.f lag from a 440 V three phase 50 Hz (balanced). There is another load on the same line and load is connected in the form of a Δ having 9 ohm resistance and -j54 ohm 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 a) State and explain Faraday's law of Electromagnetic Induction. 6 Marks

b) Two coils A and B are wound on same ferromagnetic core. There are 300 turns on A and 2800 turns on B. A current of 4A through coil A produces a flux of 800 μWb in the core. If this current is reversed in 20 ms, find the average e.m.f induced in coils A and B. 8 Marks

(OR)

8 a) A steel ring of 25 cm mean diameter and of circular section of 3 cm in diameter has an air gap of 1.5 mm length. It is wound uniformly with 700 turns of wire carrying a current of 2A. Calculate. 10 Marks

i) Magneto motive force. ii) Flux density

iii) magnetic flux iv) Relative permeability of steel ring.

b) Explain about series connection of coupled coils. 4 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

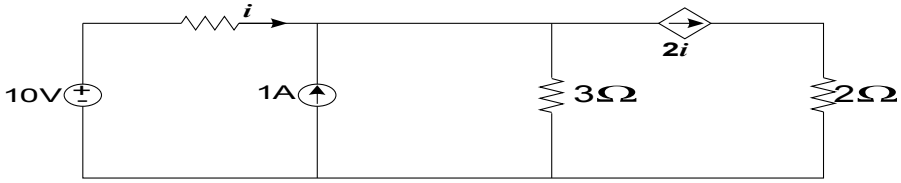

Fig.4

(OR)

10 a) State and explain Tellegen's theorem with a suitable example. 7 Marks

b) Find the value of R in the circuit shown in Fig.5 such a way that the maximum power transfer takes place. What is the amount of this power? 7 Marks

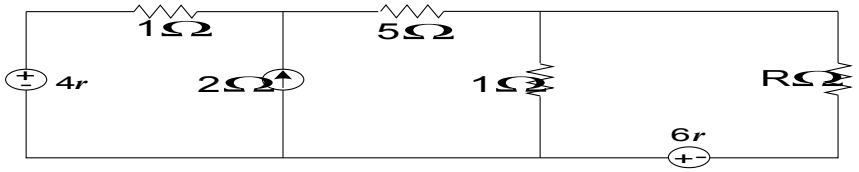

Fig.5

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Regular Examinations November - 2015

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)	Explain the working principle of a DC Motor. Derive the Torque equation.	8 Marks
	b)	A long shunt compound generator delivers a load current of 50 A at 500 V and has armature, series field and shunt field resistances of 0.05 Ω, 0.03 Ω and 250 Ω respectively. Calculate the generated voltage and armature current. Allow 1 V per brush for contact drop.	6 Marks

UNIT-II

3	a)	Derive an EMF equation of a single phase transformer with respect to phasor diagram.	8 Marks
	b)	A single phase (2000/200) V, 50 Hz transformer has a net core area of 46 cm^2 and a maximum density of 8 wb/m^2. Calculate the number of turns of primary and secondary windings.	6 Marks

(OR)

4	a)	Explain in detail about types of transformer cores.	7 Marks
	b)	Calculate the percentage voltage drop for a transformer with a percentage resistance of 2.5% and percentage reactance of 5% of rating 500 kVA when it is delivering 400 kVA at 0.8 p.f. lagging.	7 Marks

UNIT-III

5	a)	Derive the relation between phase and line quantities in three phase Delta connection.	6 Marks
	b)	Three equal star connected inductors take 8 KW at a power factor of 0.8 lagging, when connected across a 460 V, three phase three wire supply. Find the circuit constants of the load per phase.	8 Marks

(OR)

6	a)	Mention the advantages of a poly phase system over a single phase system.	6 Marks
	b)	Phase voltage and current of a three phase star connected inductive load is 150 V and 25 A, power factor of the load is 0.707 lag. If the power is measured with two wattmeter method. Find the reading of each wattmeter.	8 Marks

UNIT-IV

7	a)	Explain the Torque-slip characteristics of a three phase Induction Motor.	8 Marks
	b)	Give the comparison between Squirrel cage Induction motor and Slipring Induction motor.	6 Marks

(OR)

8	a)	Explain the principle of operation of an alternator.	7 Marks
	b)	Give the comparison between Salient pole Alternator and the Cylindrical rotor Alternator.	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) Regular Examinations November - 2015

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) State and explain Kirchhoff's law with suitable examples. 6 Marks

b) Find the voltage across 2Ω resistor in Fig.1. 8 Marks

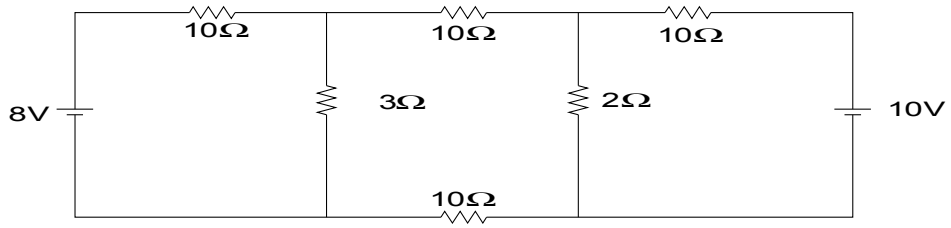

Fig.1.

(OR)

2 a) Briefly explain about source transformation techniques. 7 Marks

b) Find the voltage across 10Ω resistor in Fig.2 as shown below. 7 Marks

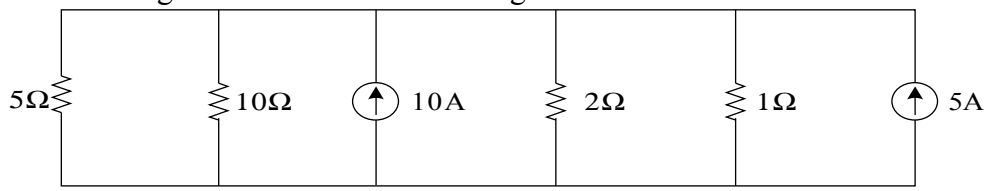

Fig.2

UNIT-II

3 a) Determine the sinusoidal response of series RC circuit. 7 Marks

b) Why the r.m.s. values of an alternating quantity is more important than its average value. Find the r.m.s. value of the resultant current in a conductor which carries simultaneously sinusoidal alternating current with a maximum value of 15A and direct current of 15A, by deriving necessary expressions. 7 Marks

(OR)

4 a) Define the following terms with respect to fundamental sinusoidal a.c quantity. 8 Marks
i) Average value; ii) RMS value; iii) Instantaneous value iv) Form factor

b) Distinguish between RLC series and parallel resonance circuits. 6 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) What is two port network and obtain the equations of admittance parameters of two port network? 7 Marks

b) Obtain open loop circuit parameters and loop equations of the network shown in Fig.3. 7 Marks

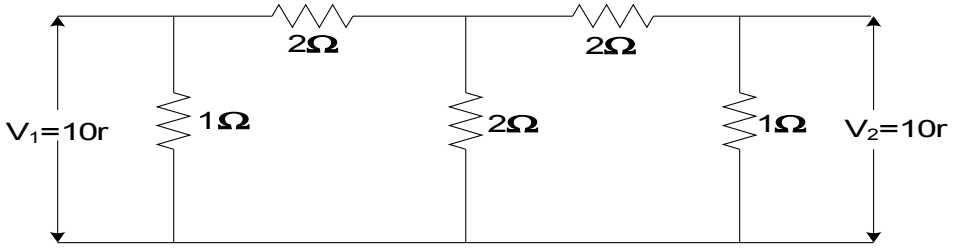

Fig.3

(OR)

8 a) List out the classification and applications of each filter. 8 Marks

b) Obtain transmission parameters of the network shown in Fig.4. 6 Marks

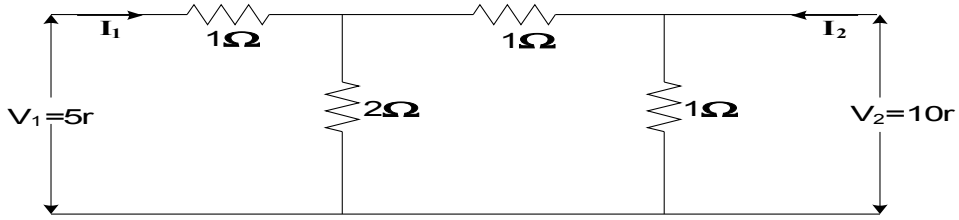

Fig.4.

UNIT-V

9 a) Define and List out the applications of Maximum power transfer theorem and Thevenin's theorem. 6 Marks

b) Determine current through the 5Ω resistor in Fig.5. 8 Marks

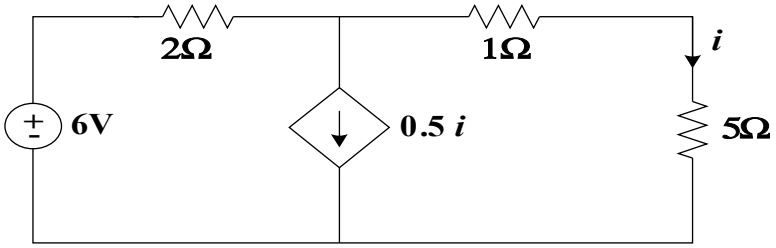

Fig.5

(OR)

10 a) State and explain compensation theorem with a suitable example. 7 Marks

b) Obtain Thevenin's equivalent circuit to the left of a-b in the circuit of Fig.6. 7 Marks
Also find (V_o/V_1).

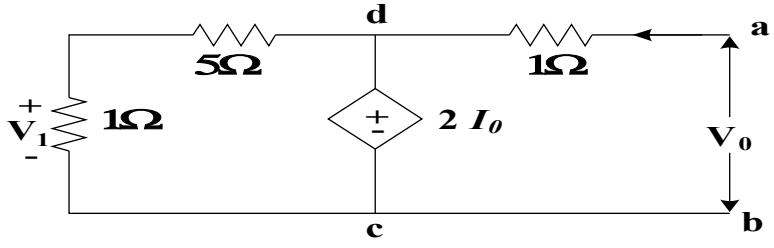

Fig.6

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular Examinations November - 2015

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)	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		With a neat sketch, explain Arc welding process.	14 Marks
		(OR)	
6		With a neat sketch, explain the working of two stroke petrol engine.	14 Marks

UNIT-IV

7	a)	Explain the working principle of Vapor Compression refrigeration system with a neat sketch.	7 Marks
	b)	Write five desirable properties of a refrigerant.	7 Marks
		(OR)	
8	a)	Define Air Conditioning. Explain the Comfort air - Conditioning system.	7 Marks
	b)	Explain the Summer 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) Belt conveyors ii) Bucket Conveyors	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Regular Examinations November - 2015

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) Explain the division of current in the parallel branches. 7 Marks

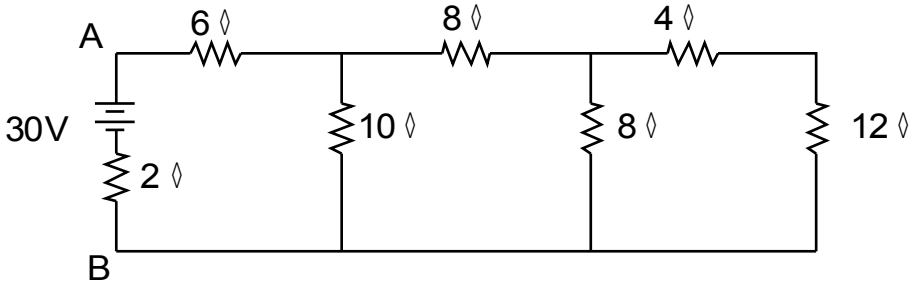
b) A circuit consists of three resistances of 12, 18 and 36 ohms respectively by joined in parallel and the combination is connected in series with a resistance of 12 ohms. The whole circuit is connected to 60V supply. Calculate current in each branch, total current drawn and power dissipated in each resistor. 7 Marks

(OR)

2 Six resistors are connected as shown in figure. If a battery having an emf of 30V and an internal resistance of 2 is connected to terminals A and B. Find: 14 Marks

i) Current supplied from battery

ii) Potential difference across 8 ohms resistance.



UNIT-II

3 a) Derive the expressions of average power and instantaneous power of RL series circuit with help of phasor diagrams. 10 Marks

b) A choke coil takes a current of 205A when connected across 250V, 50Hz mains and consumes 400 watts. 4 Marks
Find i) Power factor and ii) Resistance of the circuit.

(OR)

4 a) Derive the expressions of RMS value and average value of fundamental sinusoidal quantity. 8 Marks

b) A capacitor and resistor are connected in series with 240V, 50Hz supply. Find the value of C, so that R absorbs 300W at 100V. Also find maximum charge and maximum energy stored in C. 6 Marks

UNIT-III

5	a)	Develop an expression for induce emf in a DC machine from first principles and what is the basic nature of the induce emf in a DC generator?	7 Marks
	b)	A 220V motor has an armature circuit resistance of 0.5Ω. If the full load armature current is 35A and the no load armature current is 6A. Find the change in back e.m.f from no-load to full-load.	7 Marks

(OR)

6	a)	From the fundamentals, derive the expression for the EMF equation of a single phase transformer.	7 Marks
	b)	A 50 Hz, 4-pole, 3-phase induction motor has a rotor current of frequency 2Hz. Determine (i) the slip and (ii) speed of the motor.	7 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)	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)	Compare the input and output characteristics of BJT in the three configuration.	7 Marks
	b)	Derive the necessary conditions for oscillators.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Regular Examinations November - 2015

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)	Define following: (i) Electric current (ii) Potential difference (iii) Electric power (iv) Electro motive force.	8 Marks
	b)	A coil consists of 2700 turns of copper wire having a cross sectional area of 0.7 mm^2. The mean length per turn is 90 cm. The resistivity of copper at normal working temperature is 0.02 μΩm. Calculate the resistance of the coil.	6 Marks
		(OR)	
2	a)	State and explain Kirchoff's laws.	8 Marks
	b)	What is the symbolic representation of ideal independent DC current source? Also draw its V-I characteristics.	6 Marks

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 the i) impedance of the circuit and ii) the power factor.	6 Marks
		(OR)	
4		A series RC circuit with R = $4.0 \times 10^3 \Omega$ and C = 0.40 μF is connected to an AC voltage source V(t) = (100 V)sinωt , with ω = 200 rad/s . 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.	14 Marks

UNIT-III

5	a)	What is the Principle of operation of DC generator?	6 Marks
	b)	Discuss about the Constructional details of DC generator.	8 Marks
		(OR)	
6	a)	Derive the expression for Condition of Maximum efficiency of a DC generator.	8 Marks
	b)	What are the applications of DC generators and DC motors?	6 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)	With the help of schematic diagram, explain the Principle of Operation of AC servo motor.	8 Marks
	b)	Explain the Working principle of three-phase induction motor.	6 Marks

UNIT-V

9	a)	How measuring instruments are classified on the basis of type of input? Explain each of them Clearly.	8 Marks
	b)	Explain about the construction and operation of Attraction type Moving Iron instruments.	6 Marks

(OR)

10	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

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Regular Examinations November - 2015

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 and explain about ideal and practical current, voltage sources.	6 Marks
	b)	Derive the relationship to express three delta connected resistances into equivalent star.	8 Marks
		(OR)	
2	a)	A particular battery when loaded by a resistance of 45Ω gives a terminal voltage of 47V. If the load resistance is increased to 95Ω the terminal voltage is observed to be 46V. Determine EMF and internal resistance of the battery.	8 Marks
	b)	State and explain Kirchoffs voltage and current laws.	6 Marks

UNIT-II

3	a)	Explain how average value and **rms** 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 = 135 sin 270t (V). Find the power p and the **rms** 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 the constructional details of **dc** generator.	7 Marks
	b)	Derive the expression for **emf** equation of a **dc** generator.	7 Marks
		(OR)	
6	a)	Explain the principle of operation of **dc** motor.	7 Marks
	b)	How many types of **dc** machines are available? Give applications for each.	7 Marks

UNIT-IV

7	a)	Explain the classification of transformers.	7 Marks
	b)	Define regulation. How to obtain regulation of a transformer?	7 Marks
		(OR)	
8	a)	Explain the advantages of 3 phase induction motor over 1 phase induction motor.	7 Marks
	b)	Describe the constructional details of a slip ring induction motors.	7 Marks

UNIT-V

9	a)	Discuss about open loop systems with illustrations.	7 Marks
	b)	Discuss various time variant and time invariant systems with illustrations.	7 Marks
		(OR)	
10	a)	Derive the Transfer Function for a series R-L-C circuit by considering unit step input and output across the capacitor.	7 Marks
	b)	Explain various terminology used in Mason's Gain formula to determine Transfer function.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular Examinations November - 2015

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)	Draw the tensile test diagram for mild steel material and discus about the salient points of the diagram.	6 Marks
	b)	A copper rod 25 mm in diameter is encased in steel tube 30 mm internal diameter and 35 mm external diameter. The ends are rigidly attached. The composite bar is 600 mm long and is subjected to an axial pull of 50KN. Find the stresses induced in the rod and the tube. Take E for steel as 2×10^5 N/mm^2 and E for Copper as 1×10^5 N/mm^2.	8 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 3 cm diameter is enclosed centrally in a hollow copper tube of external diameter 50 mm and internal diameter of 40 mm. The composite bar is then subjected to an axial pull of 45 KN . If the length of each bar is equal to 150 mm, 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)	What are sagging and hogging bending moments? Explain.	4 Marks
	b)	A cantilever 1.5m long is loaded with a uniformly distribution load of 2 KN /m run over a length of 1.25m from the free end it also carries a point load of 3 KN at a distance of 0.25m from the free end. Draw the shear force and bending moment diagram of the cantilever.	10 Marks

(OR)

4	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

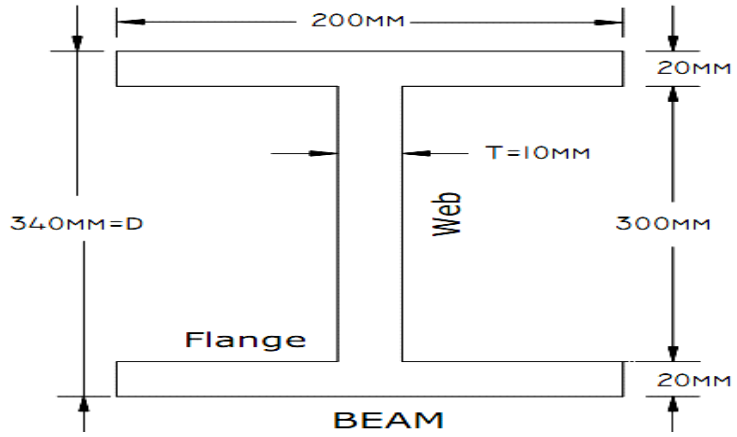
UNIT-III

5	a)	Deduce the torsion equation stating the assumptions made.	7 Marks
	b)	A steel shaft ABCD having a total length of 2400 mm is contributed by three different sections as follows. The portion AB is hollow having outside and inside diameters 80 mm and 50 mm respectively, BC is solid and 80 mm diameter. CD is also solid and 70 mm 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 50 Mpa and shear modulus 0.82×10^5 MPa.	7 Marks

(OR)

6 a) Develop the theory of simple bending, clearly stating the assumptions made. 7 Marks

b) An I-Section as shown in figure, beam 340 mm **x** 200 mm has a web thickness of 10mm and flange thickness of 20 mm. It carries a shearing force of 100 KN. Sketch the shear stress distribution across the section. 7 Marks



UNIT-IV

7 a) State the assumption made deriving the equation for beam deflection. 4 Marks

b) A cantilever of length L carries a concentrated load P at its mid-span. If the free end be supported on a rigid prop, determine the reaction at the prop. Draw the shearing force and bending moment for the cantilever showing the values at the salient points. 10 Marks

(OR)

8 a) Explain Macaulay's Method for finding the slope and deflection at any section. 6 Marks

b) A simply supported beam of length L carries a load W at a distance ***a*** from one end, ***b*** from the other end (***a*** > ***b***). Find the position and magnitude of the maximum deflection and show that the position is always with L/13 approximately from the centre. 8 Marks

UNIT-V

9 a) A pressure vessel, which is made of steel is 2m long, it is closed at both the ends and has on external diameter of 450 mm and is 10 mm thick. Find the increase of the external diameter and the increase of length which charged to an internal pressure of 1 MPa. Take E = 20**x**10^6 N/cm^2 and **μ** = 0.25. 7 Marks

b) Show that when a thin-walled spherical vessel of diameter ***d*** and thickness ***t*** is subjected to an internal fluid pressure ***p***, the increase in volume is equal to {Πpd^4 / 8tE*(1-(1/m)}. To what depth would a copper float, 25.4 cm diameter and 0.3 cm thick, have to be sunk in sea water in order that the diameter is decreased by 0.003 cm?
Take E = 20**x**10^6 N/cm^2 and **μ** = 0.27; weight of sea water = 10.25 kN/m^3. 7 Marks

(OR)

10 a) A steel cylinder of 1000 mm inside diameter is to be designed for an internal pressure of 4.8 MN/m^2. Take E = 200 GN/m^2 and **μ** = ⅓ and calculate:
i) The thickness if the maximum shearing stress is not to exceed 21 MN/m^2.
ii) The increase in volume, due to working pressure, if the cylinder is 7 m long with closed ends. 8 Marks

b) A thick spherical shell of 180 mm internal diameter is subjected to an internal fluid pressure of 24 MN/m^2. If the permissible tensile stress is 120 MN/m^2, find the thickness of the shell. 6 Marks

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CODE No.:14BT30302 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular Examinations November - 2015

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 point defects in a crystal lattice structure? Explain them with neat diagrams.	7 Marks
	b)	What are the different methods used to determine the grain size in metals? Explain.	7 Marks
		(OR)	
2	a)	What are the different types of bonding in materials? Explain them with suitable examples.	7 Marks
	b)	Why materials exhibit different mechanical properties? Explain.	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)	Describe how TTT' curves are useful in the heat treatment processes of steel.	7 Marks
	b)	Write a short note on : i) Process annealing ii) Hardening	7 Marks
		(OR)	
6	a)	"Hardening of steel is always followed by tempering" Give reasons.	7 Marks
	b)	What is carburizing? Why is it done?	7 Marks

UNIT-IV

7	a)	What are the common alloying elements other than carbon in low alloy steels? Explain.	7 Marks
	b)	What is brass? Describe the composition, properties and uses of important types of brasses.	7 Marks
		(OR)	
8	a)	How are engineering materials classified? How ferrous metals differ from non-ferrous metals? Explain.	7 Marks
	b)	What is had field manganese steels? Explain structure and properties of them.	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) Regular Examinations November - 2015

THERMODYNAMICS

[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: i) state ii) property iii) process iv) cycle and v) enthalpy.	7 Marks
	b)	Consider a gas enclosed in a piston-cylinder arrangement. The gas is initially at 150 kPa and occupies a volume of 0.03 m^3. The gas is now heated until the volume of the gas increases to 0.1 m^3. Calculate the work done by the gas if volume of the gas is inversely proportional to the pressure.	7 Marks
		(OR)	
2	a)	State the Zeroeth law of thermodynamics. What is its importance? What do you understand by international scale of temperature?	7 Marks
	b)	What is thermodynamic equilibrium? Explain the significance of quasi-static process.	7 Marks

UNIT-II

3	a)	What is PMM1 and write the limitations of First of thermodynamics.	4 Marks
	b)	A system exists with 0.2 m^3 of a gas at 4 bar and 425 K. It is expanded adiabatically to 1 bar. The gas is then heated at constant pressure till its enthalpy increases by 70 kJ. Calculate the total work done.	10 Marks
		(OR)	
4	a)	With the help of the First law of thermodynamics prove that the internal energy is a property.	6 Marks
	b)	3 kg of an ideal gas is expanded from 7 bar and volume 1.5 m^3 to a pressure of 1.4 bar and volume 4.5 m^3. The change in internal energy is 520 kJ. The specific heat at constant volume for the gas is 1.05 kJ/kgK. Calculate : i) Gas constant ii) change in enthalpy iii) Initial and final temperature and iv) heat exchange.	8 Marks

UNIT-III

5	a)	One Kg of ice at -5^{0}C is exposed to the atmosphere which is at 20^{0}C. The ice melts and comes into thermal equilibrium with the atmosphere. Determine the entropy increase in the Universe.	7 Marks
	b)	Obtain an equation for maximum work available in a non-flow system.	7 Marks
		(OR)	
6	a)	A system at 500 K receives 7200 kJ/min from a source at 1000K. The temperature of atmosphere is 300K. Assuming that the temperature of the system and source remain constant during heat transfer, find out; (i) The net change of entropy during heat transfer. (ii) The decrease in available energy after heat transfer.	7 Marks
	b)	Define entropy. State and prove the principle of increase of entropy.	7 Marks

UNIT-IV

7 a) Explain the following terms: 6 Marks

i) Sensible heat
ii) Dryness fraction of steam
iii) Priming
iv) Superheated steam

b) Determine the enthalpy, volume, internal energy and entropy of superheated steam at 15 bar pressure and 220^{0}C. The volume of water may be neglected and take specific heat of superheat steam equal to 2.2 kJ/kg K. 8 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 An air standard limited pressure cycle has a compression ratio of 15 and compression begins at 0.1 MPa, 40^{0}C. The maximum pressure is limited to 6 MPa and the heat added is 1.675 MJ/kg. Compute: 14 Marks

(i) the heat supplied at constant volume per kg of air.
(ii) the heat supplied at constant pressure per kg of air.
(iii) the work done per kg of air.
(iv) the cycle efficiency.
(v) the temperature at the end of the constant volume heating process.
(vi) the cut-off ratio.
(vii) the m.e.p. of the cycle.

(OR)

10 a) With the aid of P-V and T-S diagrams, derive an expression air standard efficiency of diesel cycle. 8 Marks

b) In an air standard Otto cycle, the compression ratio is 7 and the compression begins at 35^{0}C, 0.1 MPa. The maximum temperature in the cycle is 1100^{0}C. Find: 6 Marks

(i) cycle efficiency.
(ii) mean effective pressure of the cycle.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular Examinations November - 2015

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 5 cm 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	a)	Describe the solidification of a pure metal with a neat sketch in moulding process.	7 Marks
	b)	Large castings are not made by investment casting. Explain, Why?	7 Marks

(OR)

4	a)	Explain the construction and operation of Cupola furnace with diagram.	7 Marks
	b)	Write a short note on “Chills”.	7 Marks

UNIT-III

5	a)	What are the low temperature joining processes? Explain briefly.	7 Marks
	b)	Why is brazing an appropriate method for joining dissimilar metals with widely different melting points?	7 Marks

(OR)

6	a)	Distinguish between brazing, soldering and welding.	7 Marks
	b)	Write briefly on testing and inspection of welding.	7 Marks

UNIT-IV

7	a)	Explain the principle, operation, advantages and limitations of TIG welding process.	7 Marks
	b)	A direct current welding machine with a linear power source characteristic provides a open circuit voltage of 80 V and short circuit current of 800 A. During welding with the machine, the measured arc current is 500 A corresponding arc length of 5.0 mm and the measured arc current is 460 A corresponding to an arc length of 7.0 mm. Find the relation between linear arc voltage (V) and arc length (L).	7 Marks

(OR)

8	a)	Discuss the effect of polarity on weld bead geometry.	3 Marks
	b)	How are electrodes in arc welding process designated?	4 Marks
	c)	What are the types of electrodes used in arc welding process? List the functions of electrode coating	7 Marks

UNIT-V

9	a)	Explain the method of laser beam welding and give their applications.	7 Marks
	b)	Explain the method of electron beam welding and given their applications.	7 Marks
		(OR)	
10	a)	Discuss the process parameters of EBM and their influence on machining quality.	7 Marks
	b)	Explain the process capabilities of EBM and PAM.	7 Marks

CODE No.:14BT30401 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Regular Examinations November - 2015

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) State and prove multiplication theorem of probability. 6 Marks

b) For any two events A and B in a sample space S, if $B \subset A$ then prove that P(A/B)= 1. 8 Marks

UNIT-II

3 a) Explain the conditions for a function to be random variable. 6 Marks

b) A random variable X has probabilities shown in table. 8 Marks

X	-3	-2	-1	0	1	2
P(x)	0.2	0.4K	K	0.3	0.1K	K

i) Find the value of K.

ii) Find $F_X(x)$ and draw the plot.

(OR)

4 a) State and prove any four properties of probability density function. 6 Marks

b) When two dice are thrown, calculate the expected value of the sum of number of points on them. 8 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) Discuss about Gaussian Random Process and Poisson Random Process. 7 Marks

b) Discuss the auto correlation properties of a random process. 7 Marks

(OR)

8 A random process is defined by $Y(t) = X(t)\cos(w_0 t+\theta)$ where X (t) is a wide-sense stationary random process that amplitude modulates a carrier of constant angular frequency w_0 with a random phase $'\theta$ independent of X (t) and uniformly distributed on $(-\pi,\pi)$.Find: 14 Marks

i) E [Y (t)] .
ii) the auto correlation function of Y (t).
iii) Is Y (t) wide-sense stationary?

UNIT-V

9 a) Consider the white Gaussian Noise of zero mean and power spectral density No/2 applied to a low pass RC filter where transfer function is 7 Marks

$H(f) = \frac{1}{1+ 2\prod fRC}$. Find the output spectral density and auto correlation function of the output process.

b) Show that for an input output system ($X(t)$, $Y(t)$, ($y(t)$); $S_{yy}(w)$ - $S_{xx}(w)$. $|H(w)|^2$ 7 Marks
where $H(w)$ is the system transfer function, and input X is wide sense stationary.

(OR)

10 a) If $X(t)$ is the input voltage to a circuit and $Y(t)$ is the output voltage, $\{X(t)\}$ is a stationary random process with μx = o and $R_{xx}(\tau) = e^{-2|\tau|}$. Find μ_y, $S_{xx}(w)$ and $S_{yy}(w)$ if the system function is given by $H(w) = \frac{1}{\varpi^2 + 2^2}$. 7 Marks

b) Define white noise. Find the A.C.F of the white noise. 7 Marks

CODE No.:14BT30402 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular Examinations November - 2015

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) Compare and contrast Si and Ge junction diodes. Mention any three applications of PN diode. 7 Marks

b) The four semiconductor diodes used in a bridge rectifier circuit, each having a forward resistance of 0.1Ω and infinite reverse resistance, feed a mean current of 10A to a resistive load from a sinusoidally varying alternating supply of 30V (r.m.s). Determine the resistance of the load and the efficiency of the circuit. 7 Marks

(OR)

2 a) Explain (i) Avalanche breakdown and (ii) Zener breakdown with reference to Zener diodes and differentiate them. Give any three applications of Zener diodes. 7 Marks

b) Draw the circuit diagram of a Full wave rectifier. Explain the operation of the circuit with relevant waveforms. Mention any three applications of it. 7 Marks

UNIT-II

3 a) Draw a sketch to show current components in a transistor and briefly explain the origin of each. Derive an expression of I_C in terms of I_b and I_{CBO}. Define α_{dc} and β_{dc}. Mention typical values of each. 10 Marks

b) Discuss the limits of operation of a BJT set by its specifications. 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

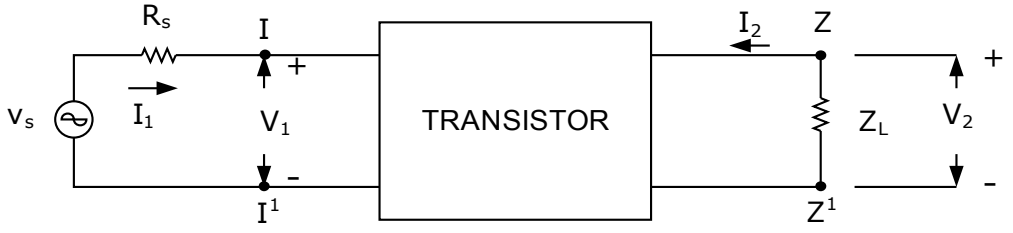
5 a) Define h-parameters. How do you determine h-parameters from transistor characteristics? 7 Marks

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) Draw the small signal hybrid model of CE amplifier and derive the expression for its A_I, A_V, R_i and R_o. 7 Marks

b) Using h-parameters, derive the expressions for $A_I = I_2/I_1$, $A_V = V_2/V_1$, R_i and Y_o of a transistor amplifier in general configuration shown in following figure. 7 Marks



UNIT-IV

7	a)	Explain the principle of n-channel MOSFET in depletion mode. Discuss its O/P and transfer characteristics.	7 Marks
	b)	For an n-channel JFET the following data is recorded. V_{GS} = -3 V; I_D = 1.6 ma V_{GS} = -4 V; I_D = 0.4 ma. Determine I_{DSS} and V_P and draw the transfer characteristics of the JFET.	7 Marks

(OR)

8	a)	Draw the biasing circuit suitable for JFET and if the JFET is replaced by a MOSFET for what mode of operation it is valid and explain about the function of each component used in the circuit.	7 Marks
	b)	Draw a diagram showing the structural details of P-Channel Depletion Enhancement MOSFET device.	7 Marks

UNIT-V

9	a)	Explain how tailoring of doping profiles improve the Varactor diode operation. Mention any three applications of it.	7 Marks
	b)	Explain the working principle of SCR with the help of V-I characteristics. Mention its applications.	7 Marks

(OR)

10	a)	What are the three main regions in the static characteristics of a UJT and what are the applications of these regions?	5 Marks
	b)	Explain in detail about the Schottky barrier diode. Mention its applications.	5 Marks
	c)	Discuss the favourable conditions for tunnelling Phenomena in Tunnel Diodes.	4 Marks

CODE No.:14BT30431 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular Examinations November - 2015

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 about the characteristics of Zener diode.	6 Marks
	b)	What are the specifications of p-n junction diode? Explain how reverse saturation current varies with temperature both in Si and Ge diodes.	8 Marks
		(OR)	
2	a)	Draw the block diagram of a regulated power supply and explain its operation.	7 Marks
	b)	Write the diode equation and discuss the effect of temperature on diode current.	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 = 40 μA.	8 Marks
		(OR)	
4	a)	A transistor operating in CB configuration has I_c = 2.96 mA, I_e = 3.00 mA and I_{co} = 0.01 mA. What current will flow in the collector circuit of this transistor when connected in CE configuration with a base current of 30μA?	7 Marks
	b)	Explain the working of a NPN transistor.	7 Marks

UNIT-III

5	a)	Compare CS, CD and CG configurations.	6 Marks
	b)	Derive an expression for drain current I_D is a function of gate to source voltage V_{GS} and drain-source voltage V_{DS}.	8 Marks
		(OR)	
6	a)	Explain the construction and working of Depletion MOSFET.	10 Marks
	b)	What is meant by Amplification and in what region of the characteristics the transistor is operated as amplifier?	4 Marks

UNIT-IV

7	a)	Describe with necessary derivations, the effect of negative feedback on bandwidth.	7 Marks
	b)	The distortion in an amplifier is found to be 3% when the feedback ratio of negative feedback amplifier is 0.04. When feedback is removed, the distortion becomes 15%. Find the open loop gain and closed loop gain.	7 Marks
		(OR)	
8	a)	State and briefly explain Barkhausen criterion for oscillations.	7 Marks
	b)	In a Hartley oscillator, the value of the capacitor in the tuned circuit is 500 pF and the two sections of coil have inductances 38μH and 12 μH. Find the frequency of oscillations and the feedback factor β.	7 Marks

UNIT-V

9	a)	Explain the characteristics of UJT with respect to a plot between V_E and I_E keeping V_{BB} at a constant value.	7 Marks
	b)	Explain the V-I characteristics of the tunnel diode with a neat sketch.	7 Marks
		(OR)	
10	a)	Explain the construction and working of Tunnel diode.	8 Marks
	b)	What are the applications of Varactor diode?	6 Marks

CODE No.:14BT30501 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular Examinations November - 2015

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	Write the algorithms to implement the basic stack operations.	14 Marks
	(OR)	
4	Implement the methods Enqueue and Dequeue.	14 Marks

UNIT-III

5	What is a Binary Tree? Explain binary Tree Traversals.	14 Marks
	(OR)	
6	Write algorithms for insertion and deletion into a Binary Search Tree.	14 Marks

UNIT-IV

7	Explain all the three process of inserting the nodes into a B-tree.	14 Marks
	(OR)	
8	Explain about different graph storage structures.	14 Marks

UNIT-V

9	Implement bubble sort and give its efficiency.	14 Marks
	(OR)	
10	What is collision resolution and discuss about open addressing?	14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular Examinations November - 2015

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 following to Decimal and then to Hexadecimal. 9 Marks
i) $\mathbf{1234_8}$
ii) $\mathbf{11001111_2}$
iii) $\mathbf{786_{10}}$

b) Perform Arithmetic operation indicated below. Follow Signed bit notation 5 Marks
i) 001110 + 110010
ii) 101011 - 100110.

(OR)

2 a) Find the complement of the following and show that **F.F' = 0** and **F + F' = 1**. 6 Marks
i) **F = xy' + x'y**
ii) **F = (x + y' + z) (x' + z') (x + y).**

b) Obtain the Dual of the following Boolean expressions. 8 Marks
i) **B'C'D + (B + C + D)' + B'C'D'E**
ii) **AB + (AC)' + (AB+C)**
iii) **A'B'C' + A'BC' + AB'c' + ABC'**
iv) **AB + (AC)' + AB'C**.

UNIT-II

3 a) If $F_1 = \mathbf{\Pi}$ 3, 4, 7, 8, 11, 14, 15 and $F_2 = \mathbf{\Sigma}$ 1, 2, 4, 5, 7, 8, 10, 11, 12, 15, obtain minimal SOP expression for $F_1 \bullet F_2$ and draw the circuit using NAND gates. 8 Marks

b) Draw the two-level NAND circuit for the following Boolean - expression: ($\overline{AB} + \overline{CD}$ E + BC (A + B) also obtain minimal SOP expression and draw the circuit using NAND gates. 6 Marks

(OR)

4 Simplify the following Boolean functions, using four variable maps: 14 Marks
i) F(w, x, y, z) = ∑(1,4,5,6,12,14,15)
ii) F(A,B,C,D) = ∑(1,5,9,10,11,14,15)

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) Implement Half Adder using 5 NAND gates. 7 Marks

b) Implement Full Subtractor using NAND gates only. 7 Marks

UNIT-IV

7 How many flip-flops are required to construct mod-12 ring and Johnson counters? Explain in detail with State diagrams. 14 Marks

(OR)

8 Define BCD Counter and Draw its State table. 14 Marks

UNIT-V

9 a) Explain the Block diagram of a memory unit. Explain the read and write operation a RAM can perform. 8 Marks

b) i) How many 32K x 8 RAM chips are needed to provide a memory capacity of 256K bytes? 6 Marks

ii) How many lines of the address must be used to access 256K bytes? How many of these lines are connected to the address inputs of all chips?

(OR)

10 Derive the PLA programming table and the PLA structure for the Combinational circuit that squares a 3-bit number. Minimize the number of product terms. 14 Marks

CODE No.:14BT31001 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular Examinations November - 2015

PRINCIPLES OF ELECTRICAL 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		Describe the working of deflection and null type instruments with a neat diagram.	14 Marks
		(OR)	
2		Explain the systematic errors that are occurred during measurements with suitable examples.	14 Marks

UNIT-II

3		Describe the construction and working of PMMC instrument. Discuss their advantages and disadvantages.	14 Marks
		(OR)	
4		Describe the working of a universal shunt used for multi-range ammeters. Derive the expressions for resistances of different sections of a universal shunt used for a 3 range ammeter.	14 Marks

UNIT-III

5		Describe the construction and working of a co-ordinate type A.C potentiometer. Discuss the sources of error in this instrument.	14 Marks
		(OR)	
6		Draw the circuit diagram of Crompton's potentiometer and explain its working principle. Describe the steps used when measuring an unknown resistance.	14 Marks

UNIT-IV

7	a)	Describe working and constructional details of single phase induction type energy meter.	8 Marks
	b)	Explain any three causes for errors in dynamometer type wattmeters.	6 Marks
		(OR)	
8	a)	Derive the torque equation of electrodynamometer type wattmeter.	7 Marks
	b)	A 230V, 50Hz single phase energy meter has a constant of 200 revolutions per kwh. While supplying a non-inductive load of 4.4 A at normal voltage the meter takes 3 minutes for 10 revolutions. Calculate the percentage error of the instrument.	7 Marks

UNIT-V

9	a)	Describe working principle of Schering bridge and Derive an expression for measurement of unknown capacitor.	10 Marks
	b)	Derive the balancing condition for Kelvin Bridge.	4 Marks
		(OR)	
10		Write short notes on:	
		i) Anderson bridge	7 Marks
		ii) Q-Meter	7 Marks

CODE No.:14BT31002 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular Examinations November - 2015

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 principle of operation of strain gauge and signal conditioning circuit for the same.	7 Marks
	b)	Define the terms Resolution, Hysteresis and Dead space.	7 Marks
		(OR)	
4	a)	A transducer is subjected to sudden change in input. It takes 10 seconds for the transducer to reach equilibrium condition. Find the time constant of the transducer.	7 Marks
	b)	Explain the features of Resistive Hygrometer.	7 Marks

UNIT-III

5	a)	Explain the LVDT with its advantages and disadvantages.	7 Marks
	b)	Write short notes on frequency response of Capacitive sensors.	7 Marks
		(OR)	
6	a)	Write the salient features of Synchros.	7 Marks
	b)	Explain the construction and working of a Tachogenerator.	7 Marks

UNIT-IV

7	a)	Describe the thermo-electric laws of thermocouple, with necessary diagrams.	8 Marks
	b)	A piezo-electric transducer has a capacitance of 1000 pF and a charge sensitivity of 40 **x** 10^{-3} C/m. The connecting cable has a capacitance of 300 pF while oscilloscope used for readout has a input resistance of 1 MΩ with a parallel capacitance of 50 pF. (i) What is the sensitivity of transducer alone? (ii) What is the high frequency sensitivity of entire measuring system? (iii) What is the lowest frequency that can be measured with 5 % amplitude error by the entire system?	6 Marks
		(OR)	
8	a)	State Photovoltaic Effect. Explain it with a neat diagram in a p-n junction and draw the equivalent circuit for a photovoltaic detector. Also discuss its applications.	7 Marks
	b)	Describe the different types of compensations used in thermocouples.	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)	Describe the four micromachining techniques with neat diagrams and compare their advantages and uses.	7 Marks
	b)	Discuss in brief about fundamentals of ultrasonic based sensors and explain about working of ultrasonic level sensors, with a neat diagram.	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Regular Examinations November - 2015

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 $\big((P \vee Q) \wedge \neg (\neg P \wedge (\neg Q \vee \neg R))\big) \vee (\neg P \wedge \neg Q) \vee (\neg P \wedge \neg R)$ is a tautology. 7 Marks

b) Obtain principal disjunctive normal form of $(P \leftrightarrow R) \wedge (Q \rightarrow P)$. 7 Marks

(OR)

2 a) Show that $P \rightarrow S$ is a valid conclusion from the premises $\neg P \vee Q, \neg Q \vee R$ and $R \rightarrow S$. 7 Marks

b) Show that $\neg P$ follows logically from $\neg Q \wedge (P \rightarrow Q)$, using Automatic theorem proving. 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) Let ({a, b},=) be a semi group ,where a*a=b , show that a*b=b*a and b*b=a. 7 Marks

b) Let the set Q of all rational numbers and the operation * is defined by a*b=a+b - ab. Show that, under this operation, Q form commutative monoid. 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) 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

(OR)

8 a) Solve the recurrence relation $a_n - 7a_{n-1} + 10a_{n-2} = 0$ *for* $n \geq 2$ $a_0 = 10$ *and* $a_1 = 41$ using generating functions. 7 Marks

b) Determine the number of non negative integral solutions of the equation $x_1+x_2+x_3+x_4+x_5 = 20$ where each $x_i \geq 2$. 7 Marks

UNIT-V

9	a)	Show that two simple graphs are isomorphic iff there complements are isomorphic.	7 Marks
	b)	Explain DFS algorithm with example.	7 Marks
		(OR)	
10	a)	State and prove Grin berg's Theorem.	7 Marks
	b)	Show that the complete Bipartite graph of $k_{3,3}$ is non planar.	7 Marks

CODE No.:10BT3BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2015

PROBABILITY AND STATISTICS

[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) Box A contains 5 red and 3 white marbles and box B contains 2 red and 6 white marbles. If a marble is drawn from each box, what is the probability that they are both of same color?

b) For the continuous probability function $\mathbf{f(x)=kx^2e^{-x}}$ when $\mathbf{x \geq 0}$, find (i) k (ii) mean (iii) variance.

2. a) Find the probability that at most 5 defective components will be found in a lot of 200. Experience shows that 2% of such components are defective. Also find the probability of more than five defective components.

b) The marks obtained in statistics in a certain examination found to be normally distributed. If 15% of the students $\geq$ 60 marks, 40% < 30 marks, find the mean and standard deviation of marks.

3. a) Calculate the coefficient of correlation for ranks from the following data.

X	5	10	6	3	19	5	6	12	8	2	10	19
Y	8	3	2	9	12	3	17	18	22	12	17	20

b) Find (i) the least square regression line of y on x and
(ii) the least square regression line of x on y for the following data.

Mass of father X	65	63	67	64	68	62	70	66	68	67	69	71
Mass of sonY	68	66	68	65	69	66	68	65	71	67	68	70

4. a) A population consists of six numbers 4,8,12,16,20,54 consider all samples of size two which can be drawn without replacement from this population. Find
i) the population mean
ii) the population standard deviation
iii) the mean of the sampling distribution of means
iv) the standard deviation of the sampling distribution of means.

b) A sample of size 65 is taken from a population whose standard deviation is 12. Find the standard error of sampling distribution of means.

5. a) In a random sample of 100 tube lights produced by company A, the mean lifetime (mlt) of tube light is 1190 hours with standard deviation of 90 hours. Also in a random sample of 75 tube lights from company B the mean lifetime is 1230 hours with standard deviation of 120 hours. Is there a difference between the mean lifetimes of the two brands of tube lights at a significance level of 0.05?

b) A manufacturer of electronic equipment subjects samples of two completing brands of transistors to an accelerated performance test. If 45 of 180 transistors of the first kind and 34 of 120 transistors of the second kind fail the test, what can he conclude at the level of significance $\alpha = \mathbf{0.05}$ about the difference between the corresponding sample proportions?

6. a) A random sample from a company's very extensive files shows that the orders for a certain kind of machinery were filled, respectively in 10,12,19,14,15,18,11 and 13 days. Use the level of significance **a=0.01** to test the claim that on the average such orders are filled in 10.5 days. Assume normality.

b) A pair of dice are thrown 360 times and the frequency of each sum is indicated below.

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?

7. Write about control chart for **np**. What are the control limits? How do you interpret a point out of control limits?

8. A one person barber shop has six chairs to accommodate people waiting for hair cut. Assume that customers who arrive when all the six chairs are full leave without entering the shop. Customers arrive at the average rate of 3 per hour and spend an average of 18 minutes for service. Find

i) the probability that a customer can get directly into the barber chair upon arrival
ii) expected number of customers waiting for haircut
iii) effective arrival rate
iv) the time a customer can expect to spend in the barber shop.

CODE No.:10BT3BS03

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2015

SPECIAL FUNCTIONS AND COMPLEX ANALYSIS

[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) Find a solution of $\frac{\partial u}{\partial x} = 2\frac{\partial u}{\partial t} + u$ *where* $u(x,0) = 6\,e^{-3x}$ by method of separation of Variables.

b) Find the complete integral of $y^2p - xy.q = x(z - 2y)$ by Lagrange's method.

2.

a) Show that $\beta(m,n) = \frac{\Gamma(m).\Gamma(n)}{\Gamma(m+n)}$.

b) State and Prove Generating function of Bessel's function.

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) Find the value of $\int_0^{1+i}(x - y + ix^2)dz$ along real axes from $z = 0$ to $z = 1$ and then along a line parallel to the imaginary axis from $z = 1$ to $z = 1 + i$.

b) State Cauchy integral formula. Use it to find the value of $\int_C \frac{e^{2z}}{(z+1)^4}dz$, where $C: |z| = 2$.

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 $\oint_C \frac{1}{(z^2+3z+2)}dz$ where C: $|z| = 3$ by using Residue theorem.

b) Show that $\int_0^{\infty} \frac{\sin mx}{x}\,dx = \frac{\pi}{2}$, (m > 0) using contour integration.

7.

a) State and Prove Rouche's theorem.

b) A Bilinear transformation preserves cross ratio of four points.

8.

a) Find the image of an infinite strip R: $\frac{1}{4} < y < \frac{1}{2}$ of z.plane under the mapping $w = \frac{1}{z}$ in w.plane.

b) Discuss the transformation about $w = z^2$

CODE No.:10BT3BS04

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2015

MATRICES AND NUMERICAL METHODS

[Civil Engineering, Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define the rank of a matrix and find the rank of the following matrix

$$A = \begin{bmatrix} 2 & 1 & 3 & 5 \\ 4 & 2 & 1 & 3 \\ 8 & 4 & 7 & 3 \\ 8 & 4 & -3 & -1 \end{bmatrix}$$

b) Discuss for what values of λ and μ, the simultaneous equations

x +y + z = 6; x+ 2y + 3z = 10; x +2y+λ z= μ have

(i) no solution (ii) a unique solution and (iii) an infinite number of solutions.

2.

a) Determine whether the Eigen Vectors of the matrix $A = \begin{bmatrix} 1 & 0 & -1 \\ 1 & 2 & 1 \\ 2 & 2 & 3 \end{bmatrix}$ are orthogonal.

b) Using Cayley-Hamilton Theorm find A^{-1}, where $A = \begin{bmatrix} 8 & -6 & 2 \\ -6 & 7 & -4 \\ 2 & -4 & 3 \end{bmatrix}$.

3. a) Find the real root of the Equation ***3 sinx - 2x + 5 = 0*** near 3, by Newton-Raphson method.

b) Fit a least square Quadratic curve to the following data.

x	1	2	3	4
y	1.7	1.8	2.3	3.2

4. a) State appropriate interpolation formula which is to be used to calculate the value of y when **x=1.75** from the following data.

X	1.7	1.8	1.9	2.0
Y	5.474	6.050	6.686	7.389

b) Develop the relations between the difference operators

(i) $\mathbf{E = e^{hD}}$ (D is the differential operator) (ii) $(1+\Delta)(1-\nabla) = 1$ (iii) $\mu^2 = 1 + \frac{\delta^2}{4}$.

5. a) Find the first and second derivatives of the function tabulated below at the point **x=1.2**.

x	1.0	1.2	1.4	1.6	1.8	2.0
y	0	0.128	0.544	1.296	2.432	4.00

b) Evaluate $\int_1^7 \sin(x^2)dx$ taking seven ordinates, using Simpson's 1/3rd rule.

6. a) Find y(0.1) by Taylor's series expansion given that $y' = x - y^2$ with y(0) = 1.

b) Using Runge - Kutta **4th** order method, find y(0.2) given that

$y' = 0.25y^2 - x^2$, **y(0) = -1**, by taking h = 0.1.

7. a) Form the partial differential equation by eliminating the arbitrary functions f and g from **z= f(x+ at)+g(x-at)**

b) Using the method of separation of variables solve $\frac{\partial u}{\partial x} = 2\frac{\partial u}{\partial t} + u$ where **u(x, 0)=6 e^{-3x}.**

8. a) Expand **f(x) = x** as a cosine series in the interval $0 \le x \le \pi$ an hence deduce that

$$1 + \frac{1}{3^2} + \frac{1}{5^2} + \frac{1}{7^2} + - - - - = \frac{\pi^2}{8}.$$

b) Is the function $f(x)=\begin{cases} 1+\frac{2x}{\pi}; & -\pi \le x \le 0 \\ 1-\frac{2x}{\pi}; & 0 \le x \le \pi \end{cases}$ even or odd?

Expand f(x) as a Fourier series.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2015

MECHANICS OF SOLIDS

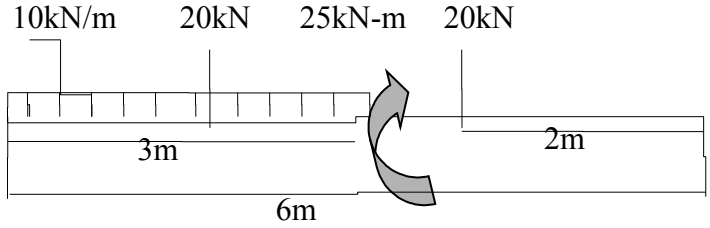
[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the following:
(i) Factor of safety
(ii) Poisson's ratio
(iii) Resilience
b) Draw the stress-strain diagram for mild steel and explain the salient points.

2. a) Define the shear force and bending moment at a section of a beam. Explain the utility of drawing SF and BM diagrams for a beam.
b) Draw the SFD and BMD for the following beam shown in Fig



3. A simply supported steel beam of span 5 m is subjected to a concentrated load of 500 kN at its mid-span. The beam has I-section with the top flange 200 mm × 15 mm, web 12 mm × 215 mm and bottom flange 150 mm × 20 mm. Draw the shear stress distribution across the depth of the section. Also determine the ratio of maximum shear stress to the mean shear stress.

4. A square footing 1.75m × 1.75m supports a vertical point of 200KN located at the quarter point of one diagonal. Neglect the self weight of the footing, Calculate the normal stresses at the four outside corners on a horizontal section of the footing. Also find the position of neutral axis.

5. What diameter of shaft will be required to transmit 80kW at 60 rpm, if the maximum torque is 30% greater than the mean and the limit of torsional stress is to be 56 Mpa. If the modulus of rigidity is 84Gpa, what is the maximum angle of twist in 3m length?

6. An open coiled steel helical spring has 10 coils of 75 mm mean diameter and the diameter of the wire is 12 mm. The angle of the helix is 22^0. Determine the load that would cause a deflection of 25 mm in the spring and the corresponding bending and shear stresses developed in the spring wire.

7. Find the change in the diameter, length and volume of a thin steel cylindrical shell of thickness 12 mm, 1.5 m diameter and 4.5 m long carrying a fluid at a pressure of 2.8 N/mm^2.

8. Design a steel thick cylinder of internal diameter 1.25 m subjected to an internal pressure of 12 N/mm^2. The maximum hoop stress in the section is not to exceed 40 N/mm^2.

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CODE No.:10BT30102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2015

BUILDING MATERIALS AND CONCRETE TECHNOLOGY

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the classification of stones and relation to their structural requirements.
b) Explain the manufacturing methods of tiles.

2. a) Explain manufacture of OPC.
b) Write the various ingredients and constituents of limestone.

3. a) Describe the field tests for cement.
b) What are the advantages and disadvantages of natural seasoning of timber?

4. a) Explain the use of fiber-reinforced plastics in the construction field.
b) Describe the application of following construction materials:
(i) Galvanised Iron
(ii) Glass.

5. a) Explain the various tests to find the workability of concrete.
b) Explain the strength of concrete under fatigue and impact.

6. a) Describe i) The factors affecting the strength of concrete, ii) curing of concrete, iii) Relation between tensile and compression strength of concrete.
b) Explain the step-by-step procedure for mix design using
i) ACI method and
ii) BIS method.

7. a) Explain the different types of shrinkage of concrete.
b) Design M 30 grade of concrete with medium workability using the following data:
Maximum size of aggregate: 20 mm
Specific gravity of cement: 3.15
Specific gravity of coarse aggregate: 2.65
Specific gravity of fine aggregate (Zone II): 2.65
Adopt IS code method.

8. a) Explain the effect of creep in Self Compacting Concrete.
b) Explain the different tests on polymer concrete.

CODE No.:10BT30103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2015

BASICS OF ELECTRICAL AND MECHANICAL TECHNOLOGY

[Civil Engineering]

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

(Minimum of two questions from each part should be chosen for answering five questions)

All questions carry equal marks

PART - A

1. a) Define Electric current and Potential difference.
b) State ohm's law and explain how it is applied in DC and AC circuits.
c) Obtain an expression for delta-to star transformation when each arm in delta had same resistance.

2. a) What are the different types of DC motor according to the ways in which fields are excited show the connection diagram of each type?
b) A separately exited generator when running at 1200 rpm supplies a current of 200 A at 125 V to a circuit of constant resistances .What will be the current when speed drops to 1000 rpm if the field current is unaltered? Armature resistance is 0.04 ohms and the total voltage drop at brushes is 2 V. Ignore the change in armature reaction.

3. a) Derive the emf equation of a transformer.
b) A 250 V/3000 V, 50Hz single phase transformer has maximum flux density of 1.2 wb/m^2. If emf/turn is 8 V. Calculate Primary, Secondary turns and area of the core.

4. a) Describe the types and constructional details of induction Motor
b) A 3-phase induction motor is wound for 4 poles and is supplied from 50 Hz systems. Calculate (i) the synchronous speed, (ii) the speed of the motor when slip is 4% and (iii) the rotor current frequency when the motor runs at 600 rpm.

PART - B

5. a) With neat sketch explain the working principle of submerged arc welding.
b) List the functions of flux on welding electrode.

6. a) How I.C engines are classified? With the aid of simple diagram, explain the working of 4-stroke diesel engine.
b) Discuss the merits and demerits of 4- stroke engines over 2-stroke engines.

7. a) What is air conditioning? Explain comfort air conditioning system.
b) What are the basic principles of air conditioning? Explain.

8. a) What are the different types of air compressors? Explain any one of them with a neat sketch.
b) Write brief note on the following:
i) Power showel.
ii) Excavator.
iii) Bucket conveyor.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2015

SURVEYING

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the various types of obstacles in chain surveying and explain with neat sketches the methods of determining the width of river with chain only?
b) While running a survey line AB, if was found that it is obstructed by a building. To overcome the problem of obstruction, a perpendicular BC, 143.65 m long was erected at B. from C, two lines CD and CE were set out at angles 30^0 and 50^0, respectively from CB. Determine the lengths of BD and BE, if D and E are on the prolongation of AB.

2. Write detailed notes on Lehmann's method for resection by three point problem. Also write the Lehmann's rules.

3. a) Describe the methods of leveling.
b) The following consecutive readings were taken with a dumpy level and 5 m leveling staff on continuously sloping ground at a common interval of 15 m. The first point is having an elevation of 85.275 m. Rule out a page of level field book and enter the readings. Calculate (i) the reduced levels of the points by rise and fall method and
(ii) the gradient of the line joining the first and last point.

0.415, 1.025, 2.085, 2.925, 3.620, 4.595, 0.715, 2.115, 3.090, 4.405.

4. The following readings give the corrected latitudes and departures (in m) of the sides of a closed traverse ABCD.

Side	Latitude		Departure	
	N	S	E	W
AB	108		4	
BC	15		249	
CD		123	4	
DA	0			257

Compute its area using (i) double meridian distance method, (ii) departure and total latitudes method, and (iii) coordinates method.

5. a) Differentiate between independent and consecutive coordinates.
b) It was possible to observe the length and bearing of a line AB directly, and the following were the observations made from two stations P and Q.

Line	Length (m)	Included angle
PA	418	S 118^0 20′ W
PQ	1050	N 25^0 12′ E
QB	400	N 75^0 54′ W

Calculate the length and bearing of line AB. Also find out the angles QBA and PAB.

6. a) What are the various constants of a tacheometer? How are they determined?
b) What do you mean by an "anallactic lens"? What are the advantages and disadvantages of using it?

7. Explain the procedure to set out simple circular curve by radial offsets and perpendicular offsets from the tangents.

8. a) What are the advantages and disadvantages of total station?
b) Write detailed notes on electronic distance measurement.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2015

FLUID MECHANICS-I

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the terms i) Dynamic viscosity ii) Kinematic viscosity. Give their dimensions.
b) Define Newtonian and Non - Newtonian fluids .
c) If the volume of a liquid decreases by 0.2% for an increase of pressure from 6.867MN/m^2 to 15.696MN/ m^2, what is the value of the Bulk Modulus of the liquid?

2. a) Derive expressions for total pressure and centre of pressure for a vertically immersed surface.
b) A triangular gate which has a base of 1.5 m and an altitude of 2 m lies in a vertical plane. The vertex of the gate is 1m below the surface in a tank which contains oil of specific gravity 0.8. Find the force exerted by the oil on the gate and the position of the centre of pressure.

3. a) Define stream function and velocity potential. State Cauchy-Reimann equations.
b) A fluid flow is given by $V = x^2y\,i + y^2z\,j - (2xyz + z^2y)\,k$. Prove that it is case of possible steady incompressible fluid flow. Also calculate velocity at P (2,1,3).

4. a) State Bernoulli's theorem. Mention the assumptions made. How it is modified while applying in practice? List out its engineering applications.
b) A pipe 300 m long has a slope of 1 in 100 and tapers from 1.0 m diameter at the higher end to 0.5 m at the lower end. Quantity of water flowing is 90 litres/s. If the pressure at the higher end is 70 KN/m^2 , find the pressure at the lower end.

5. a) Explain the following
i) Steady and unsteady flows ii) Uniform and non-uniform flows
iii) Rotational and irrotational flows.
b) Water flows at a rate of 0.147 cumec through a 150 mm diameter orifice inserted in a 300 mm diameter pipe. If the pressure gauges fitted upstream and downstream of the orifice plate have shown readings of 176 kN/ sq.m and 88 kN/sq.m respectively, find coefficient of discharge of the orifice meter.

6. Define an orifice meter. How is it different from a venturimeter? Prove that the discharge through an orifice meter is proportional to square root of head causing flow.

7. a) Oil of relative density 0.92 and dynamic viscosity 1.05 poise flows between two fixed parallel plates kept 1.2 cm apart. If the mean velocity is 1.4 m/s, calculate (i) the maximum velocity, (ii) velocity and shear stress at a distance of 0.2 cm from one of the plates and (iii) head loss in a distance of 25 m.
b) Oil of specific gravity 0.82 is pumped through a horizontal pipe 15 cm in diameter and 3 km long at a rate of 900 *l*/min. The pump has an efficiency of 68% and requires 10 hp to pump the oil. Verify that the flow is laminar and determine the viscosity of the oil.

8. a) For a rectangular notch the discharge Q over it depends on head H, width of notch b, density ρ, viscosity μ, acceleration due to gravity g and surface tension σ. Obtain a general expression for Q, taking ρ, H and g as repeating variables using Buckingham method.
b) A model of a submarine of scale 1/40 is tested in a wind tunnel. Find the velocity of air in the wind tunnel, if the speed of submarine in sea water is 15 m/s. Also find the ratio of resistance between the model and prototype. Take the values of kinematic and dynamic viscosities for sea water and air as 0.012 stokes and 0.016 stokes respectively. The densities of sea water and air given as 10.1 kN/m^3 and 0.0122 kN/m^3 respectively.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2015

FLUID MECHANICS AND HYDRAULIC MACHINERY

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) An oil film of thickness 1.5 mm is used for lubrication between a square plate of size 0.9 **x** 0.9 m and an inclined plane having an angle of inclination 20^0. The weight of the square plate is 392.4 N and it slides down the plane with an uniform velocity of 0.2 m/s. Find the dynamic viscosity of the oil.

b) Explain the terms (i) atmospheric pressure (ii) gauge pressure and (iii) vacuum pressure. What is the relationship between them?

2. a) Define the following:
i) Steady flow ii) Non-Uniform flow
iii) Laminar flow and iv) Two-dimensional flow.

b) A pipe of 1m diameter carrying 2.5m^3/s of water, is deflected through a 90^0 bend. The ends of the bend are anchored by the rods at right angles to the bend (one tie rod at each end). Find the tension in each rod. Also determine the resultant dynamic thrust on the bend and the direction of this thrust.

3. a) What are 'minor losses' in pipe flow? List the various minor losses and give the expressions for the minor losses.

b) Derive an expression for measuring the discharge of fluid through a pipe line, using a venturimeter.

4. a) 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%.

b) A jet of water of diameter 7.5 cm strikes a curved plate at its centre with a velocity of 20 m/s. The curved plate is moving with a velocity of 8 m/s in the direction of the jet. The jet is deflected through an angle of 165^0. Assuming the plate to be smooth find:
(i) force exerted on the plate in the direction of jet
(ii) power of the jet and
(iii) efficiency of the jet.

5. a) Make a neat sketch of a hydropower plant and show clearly the various elements.

b) The following data is available for a hydropower plant:
Available head = 140m
Catchment area = 200Sq.km
Annual average rainfall = 145cm
Turbine efficiency = 85%
Generator efficiency = 90%
Percolation and evaporation losses = 16%
Determine the power developed.

6. a) What are the functions of spiral casing, guide vanes and draft tube in a reaction turbine?
b) An inward flow reaction turbine has a wheel 60 cm in diameter and 5 cm wide at the outer rim, the inner diameter being 0.65 times the outer diameter. The blade angles at inlet and outlet are 75^0 and 14^0 respectively. The velocity of flow is uniform throughout the wheel. 8% of the circumferential area of the runner is blocked by the blade thickness. If the head of the turbine is 55 m, the hydraulic efficiency 88% and overall efficiency 81%, determine the speed and output of the turbine and discharge it would require. Assume radial flow at the outlet.

7. a) Define and Derive the expression for specific speed of a turbine.
b) A turbine develops 9000KW when running at 10 r.p.m. The head on the turbine is 30m. If the head on the turbine is reduced to 18m, determine the speed and power developed by the turbine.

8. a) Explain briefly the following efficiencies of a centrifugal pump:
(i) manometric efficiency
(ii) mechanical efficiency and
(iii) overall efficiency
b) What is specific speed of a centrifugal pump? Derive an expression for the specific speed of a centrifugal pump.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2015

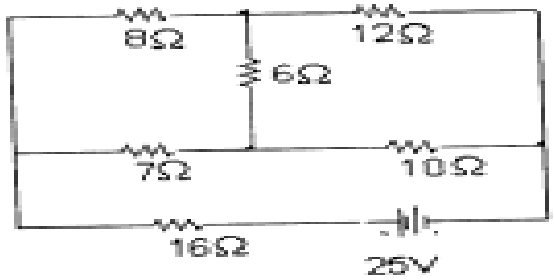
ELECTRICAL CIRCUITS

[Electrical and Electronics Engineering]

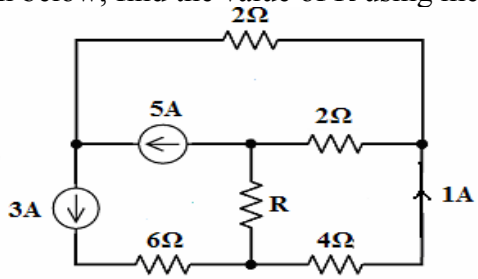
Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

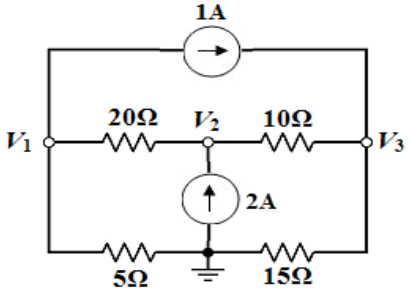
1. a) State and explain Ohm's law? Mention the units for each quantity
b) Find the current through and the voltage across all the elements in the circuit shown in below network by applying Kirchoff's laws.



2. a) In the circuit shown below, find the value of R using mesh analysis.



b) Find the nodal voltages and the power delivered by the 2A current source in the circuit shown below, using the nodal analysis.



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 half wave rectified sine wave.

4. a) Show that the resonant frequency is the geometric mean of two half power frequencies.
b) A parallel circuit consists of two branches Z_1 and Z_2 and is connected to a supply of 220V, 50 Hz. Branch 1 consists of a resistance of 10 Ω in series with an inductance of 0.1H. Branch 2 consists of a resistance of 5Ω in series with a capacitance of 50μF. Find the total current drawn from the supply. What is the overall power factor of the combination?.

5. a) Explain the power measurement by three phase circuit by using two wattmeter method with neat circuit diagram.

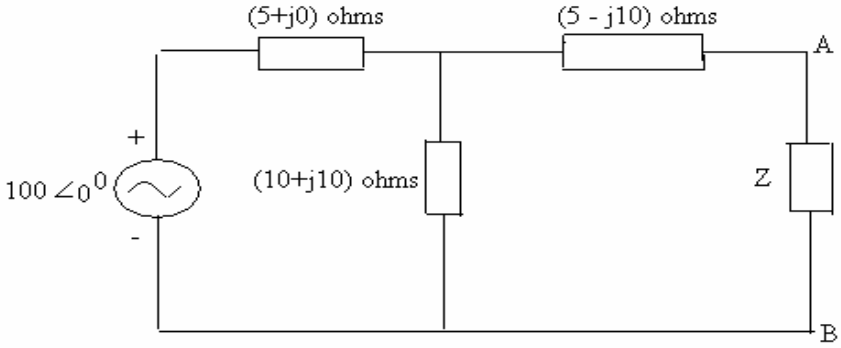
b) The unbalanced star connected load has balance voltages of 200V and the load impedances are Z_a= (1+j4) ohms, Z_b= (3-j4) ohms and Z_c = (6+j10) ohms. Calculate the line currents and the neutral current. Assume ACB sequence.

6. a) Derive the relation between self inductance, mutual inductance and coefficient of coupling

b) A steel ring of mean diameter 26 cm and circular section of 3 cm in diameter has an air gap of 1.6 mm length. If is wound uniformly with 800 turns of wire carrying a current of 3A. Calculate i) MMF, ii) flux density, iii) magnetic flux, and iv) relative permeability. Neglect magnetic leakage and assume iron path takes 35% of total MMF.

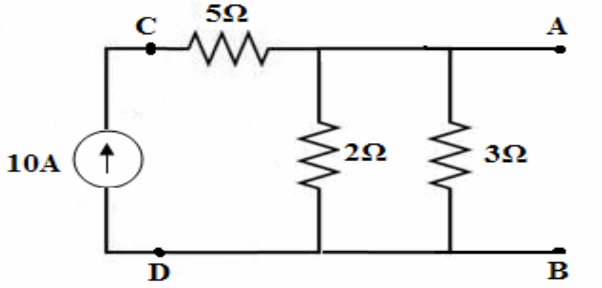
7. a) State and explain Superposition theorem.

b) When the maximum power will be flowing through the impedance Z? Also find the maximum power delivered the load impedance Z for the following network.



8. a) State and explain Tellegen's theorem.

b) Verify the Reciprocity theorem by finding the voltage across the terminals A and B of the network shown below.



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2015

DC MACHINES

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the principle of energy-conversion. From a consideration of the various energies involved, develop the model of an electromechanical energy-conversion device.
b) An Inductor is made up of 500 turns coil on a core of 12cm^2 cross sectional area and gap length 0.025 cm. the coil is connected directly to a 120V, 50Hz voltage source. Neglecting the coil resistance, coil reluctance and leakage inductance; calculate the time averaged acting on the core tending to close the air gap. How would this force vary if the air gap length was doubled.

2. a) Explain hysteresis and eddy current losses and how they are minimized.
b) The hysteresis and eddy current losses for a given specimen of magnetic material is found to be 2000 W at 50Hz. Keeping the flux density constant, the frequency of the supply is raised to 75 Hz resulting in a core loss of 3200 W.compute separately hysteresis and eddy current losses at both the frequencies.

3. a) Explain what do you mean by critical field resistance and critical speed with respect to DC generator. Also explain its significance.
b) In a 120V compound generator, the resistance of armature, shunt and series windings are 0.06 Ω, 25 Ω, 0.04 Ω respectively. The load current is 100A at 120V. Find the induced e.m.f and armature current when the machine is connected is (i) long shunt (ii) short shunt.

4. a) Explain the process of commutation in detail with respect to DC generator. Also obtain the expression for "Reactance voltage".
b) Explain the various methods of limiting armature reaction.

5. a) Explain the parallel operation of DC compound generators.
b) Describe the function of equalizing rings in DC generators.

6. a) Explain the principle of operation of a DC motor and also explain the significance of back e.m.f.
b) A 4-pole, 250V series motor has a wave connected armature with 1254 conductors. The flux per pole is 22 mwb when the motor is taking 50A. Iron and friction losses amount to 1.0 kw. Armature resistance is 0.2 Ω and series field resistance is 0.2 Ω. Calculate
(i) the speed (ii) the shaft torque (iii) the efficiency

7. a) Explain Ward-Leonard method of speed control in DC motors.
b) A 250 V, DC shunt motor on no-load runs at a speed of 1000 r.p.m and takes a current of 5A. The armature and shunt field resistance are 0.2 and 250 Ω respectively. Calculate the speed when the motor is on-load and is taking a current of 50A. Assume that the armature reaction weakens the field by 3%.

8. a) Explain the Hopkinson's test for determining efficiency of two similar DC shunt machines
b) Two series motors run at a speed of 600 and 700 r.p.m, respectively, when taking 25A at 250 V supply. The armature circuit resistance of each motor is 0.25Ω. Find the combined speed of the machines when they are connected in series taking a current of 25 A and mechanically coupled.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2015

BASIC ELECTRICAL ENGINEERING

[Computer Science and Engineering,Information Technology]

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

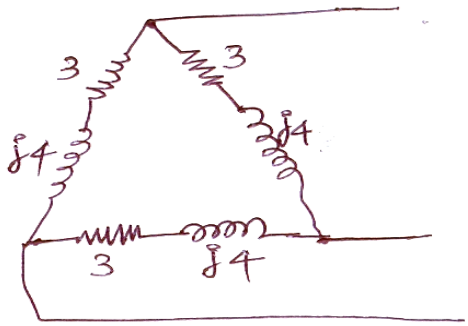
Answer any FIVE questions
All questions carry equal marks

1. Define the following terms
   a) Charge
   b) Potential difference
   c) Electric current
   d) power
   e) Ohm's law
   f) Fuse
   g) Resistance

2. a) What is the difference between 'circuit' and 'network'?
   b) Explain Thevenin's theorem and give its applications.

3. a) What is power factor and what is its impact on an electrical network?
   b) A current leading its voltage by $\mathbf{90^0}$ is required from a 230 V, 50 Hz supply using a bank of capacitors. What should be the rating of the capacitor bank?

4. a) What do you mean by three phase balanced and unbalanced loads?
   b) In the circuit shown below obtain line and phase voltages and currents.



5. a) Derive the e.m.f equation of a d.c generator.
   b) Explain the applications of various d.c motors with valid reasons.

6. a) Explain the principle and operation of a transformer.
   b) Define slip with respect to an induction motor.

7. Explain the principle of operation of
   a) Shaded pole motor and
   b) Capacitor start single phase induction motor.

8. Explain the principle of operation of a digital multimeter with the help of a neat sketch.

CODE No.:10BT30222

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2015

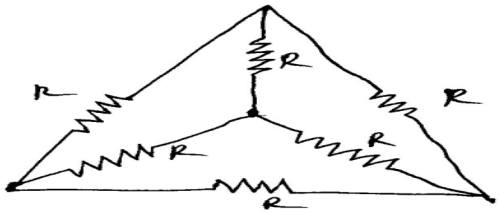
FOUNDATIONS OF ELECTRICAL ENGINEERING

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Briefly explain about the fuse and earthing.
b) Six equal resistors each of 4 ohms are connected as shown in fig. below. Find the equivalent resistance between any two corners.



2. Explain the procedural steps for solving with Thevinin's theorem.

3. a) Define the following terms applied to alternating current circuits:
(i) RMS value (ii) form factor (iii) average value (iv) peak factor
b) A resistance of 100 ohms is connected in series with 0.1 mH of inductance. This series combination is connected across 230 V, 50 Hz single phase supply. Calculate power factor, real and reactive powers consumed by the circuit. Also draw the phaser diagram.

4. a) Derive the emf equation of D.C. generator.
b) A 250 V D.C. shunt motor takes 41 Amps at full load. Find the back emf on full load if the resistances of motor armature and shunt field windings are 0.1 ohms and 250 ohms respectively.

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 11kVand 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 about different types of controlling torques in instruments.
b) Explain about repulsion type moving iron ammeter.

7. a) Distinguish between open loop and closed loop control system with respect to their performance.
b) What are different properties of linear and nonlinear systems?

8. a) Define the term *transfer function*. Derive the transfer function of the following system by writing the fundamental equations relating input and output:

b) What is the advantage of Signal Flow Graphs over block diagram representation? State and explain Mason's gain formula.

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CODE No.:10BT30223

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2015

CIRCUIT THEORY

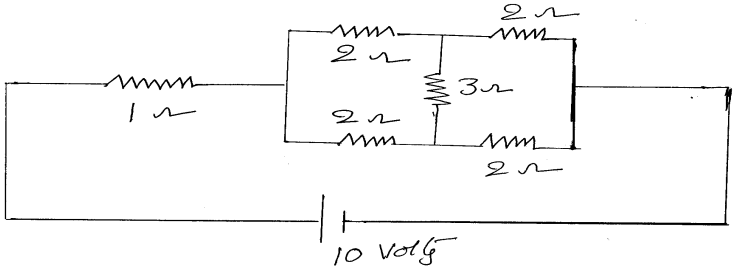
[Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

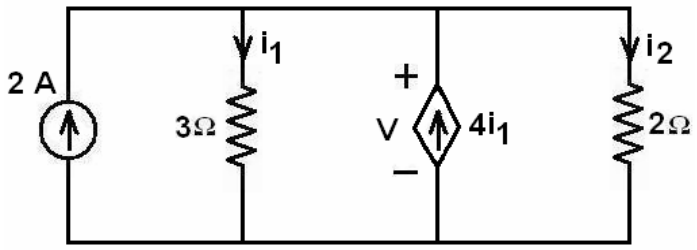
1. a) Explain the following
   i) Ohm's law
   ii) Source transformation technique
   iii) Star-Delta transformation
   iv) Current division and Voltage division rules

b) Find the power loss in 1Ω resistor in the figure shown below



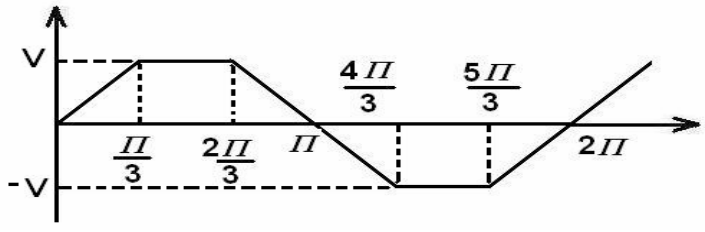
2. a) What is super node and super mesh concept explain with example.

b) Using Kirchoff's current law, find the values of the currents i_1 and i_2 in the circuit shown in figure.



3. a) A 120V, 60W lamp is to be operated on 220V, 50Hz supply mains. Calculate what value of (i) resistance (ii) 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.



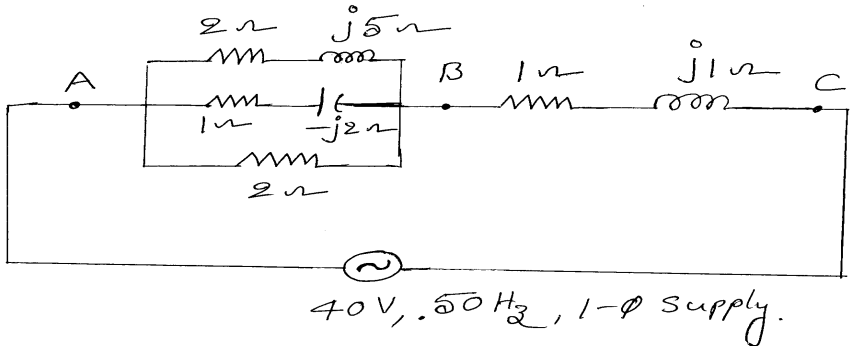
4. a) Explain the following terms
   i) Impedance
   ii) Admittance
   iii) Active Power
   iv) Power factor
   v) Power triangle

b) Find the following for a series parallel circuit shown below

i) Total impedance ii) Total apparent, real and reactive power.

iii) Current drawn from supply iv) Total admittance v) Power factor

Also draw the vector diagram.



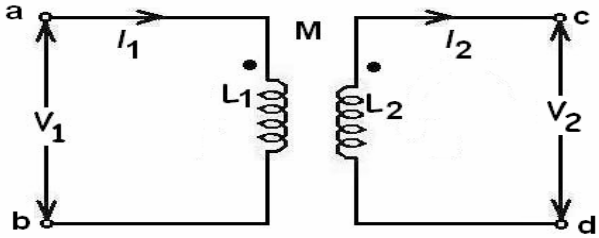
5. a) Derive the equation for the transient current i(t) in a series RL circuit excited by a sinusoidal voltage $v(t)=V_m$ Sin ωt, at time t=0. Assume zero initial conditions.

b) A series RLC circuit with R=20 ohms, L=0.05 henries and C=20 microfarads has a constant voltage of 100 Volts applied at time t=0. Determine the transient current i(t). Assume zero initial conditions.

6. a) Differentiate between series and parallel Magnetic circuits.

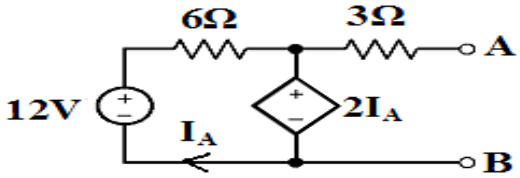
b) In fig shown below, $L_1 = 4$ H, $L_2 = 9$ H, K = 0.5, $i_1 = 5 \cos (50t - 30^0)$ A, $i2 = 2 \cos (50t - 30^0)$ A.

Find the values of (a) v_1, (b) v_2, and the total energy stored in the system at t = 0.



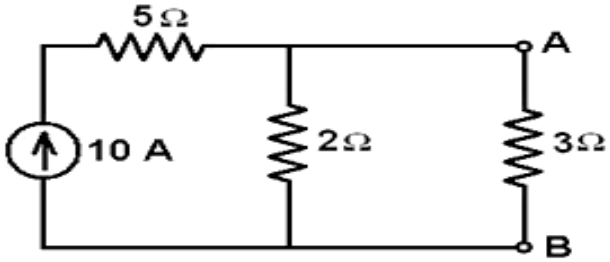
7. a) State and explain the Superposition theorem.

b) For the network shown below, find the Thevenin's voltage, Nortons's current and Thevenin's resistance.



8. a) State and Explain Tellegen's Theorem.

b) Verify Reciprocity Theorem in given circuit.



CODE No.:10BT30224

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2015

BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Show the relation between V, I and R.
b) Derive the star - delta transformation for a resistive network.
c) If 'n' number of resistors are having resistances of R_1, R_2, ----,R_n are connected in series and then find the total resistance.

2. a) With neat diagram, explain the functions of NVC and OLR in a three point starter.
b) A 4 pole lap connected shunt generator has 300 armature conductors and flux per pole of 0.1 Wb. It runs at 1000 rpm. The armature and field resistances are 0.2 and 125 ohms respectively. Calculate the terminal voltage when it is supplying 90A to load. Ignore armature reaction.

3. With neat sketches, explain the procedure of OC and SC tests on single phase transformer.

4. a) Explain how the regulation of an alternator is determined by the synchronous impedance method.
b) The effective resistance of a 2200V, 50Hz, 440KVA alternator is 0.5 ohm, and a field current of 40A gives the full load current of 200A on short circuit condition. Calculate the synchronous impedance and reactance.

5. a) Write a short note on the L and PI section filters.
b) For a half-wave rectifier with a resistive load, determine the following:
i) Average value of the current ii) RMS voltage
iii) PIV iv) dc load voltage v) Ripple factor

6. a) Explain in detail about frequency response of CE amplifier.
b) Discuss about SCR characteristics and its applications.

7. a) Explain how dielectric heating is used for different applications.
b) Explain briefly about ultrasonic welding.

8. a) Draw a basic block diagram of a CRO and explain the features of CRO in details.
b) How do you measure frequency of an unknown signal using CRO? Explain.

CODE No.:10BT30301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2015

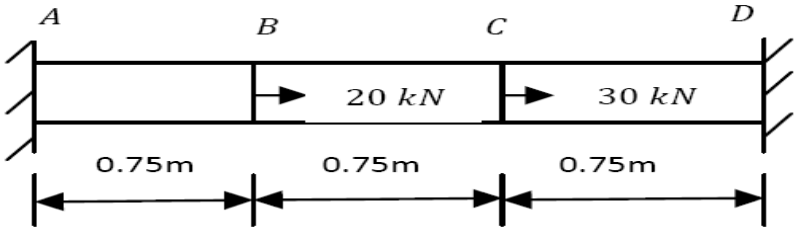
STRENGTH OF MATERIALS

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define bulk modulus and deduce the equation $E = 3K(1-2v)$.
b) A bar *AD* as shown in figure is made of steel is placed between two rigid supports *A* and *D*. The bar is loaded at *B* and *C*. Find the stresses in the portion *AB*, *BC* and *CD*. The area of the bar is 4900 mm^2 and young's modulus of steel is 2.1 X $10^5 N/mm^2$.



2. a) Define the following:
i) Bending moment ii) Shear force iii) Point of contra flexure
b) A cantilever beam of length 2 m carries a uniformly distributed load of 3 kN/m over a length of 1.5 m from its fixed end and a point load 5 kN at its free end. Draw the shear force and bending moment diagrams.

3. A beam 10cm wide and 20cm deep is used as a simply supported over a span of 3.5m with a UDL of 20 kN/m. Find:
a) the stress developed at the section 1m from right hand support
b) position and magnitude of the maximum stress developed in the beam.

4. a) Prove that the maximum shear stress for a rectangular section is 1.5 times the average shear stress.
b) A circular beam is of diameter 150mm. Find the maximum shear stress, if the beam is subjected to a shear force of 10kN.

5. a) Define springs in series and springs in parallel.
b) A close-coiled helical spring has a stiffness of 900 *N/m* in compression with a maximum load of 45N and the maximum shear stress of 120 Mpa. The solid length of the spring is 42mm. determine the mean coil diameter, wire diameter and the number of coils. $G = 40$ *Gpa*.

6. A cantilever of 4m span length carries a load 40 kN 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 cylindrical shell of 650mm internal diameter and 2.5m long has 7mm thickness. If the shell is subjected to an internal pressure of 1.3Mpa, find
a) Maximum intensity of shear stress induced
b) Change in dimensions of the shell. Take E= 205 Gpa and poisons ratio 0.3.

8. a) What are the assumptions made in Lame's theory.
b) Discuss Lame's lines construction procedure.

CODE No.:10BT30302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2015

MATERIALS SCIENCE AND METALLURGY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Why does the resistance to electric current increase in raising temperature? Explain based on metallic bonding.
b) Define and explain grain and grain boundaries.

2. a) Explain the types of solid solution and also give their examples.
b) What are the common intermediate alloy phases? Explain.

3. a) Explain the experimental methods of construction of equilibrium diagrams.
b) Explain critical temperature with respect to cooling and heating diagrams.

4. a) Draw a neat microstructure and give some properties of the following.
i) Malleable Cast Iron ii) S.G. Cast Iron
b) Draw structure and give some properties of low carbon steel.

5. a) Why does stainless steel have less machinability compared to cast iron?
b) Explain age hardening treatment.

6. Discuss the structure, composition and properties of aluminum alloys.

7. a) Compare CTT and TTT diagrams.
b) Why are aluminum alloys preferred over steel parts in aircrafts?

8. a) Explain the blending methods of producing metal powders.
b) Write the advantages and limitations of powder metallurgy.

CODE No.:10BT30303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2015

THERMODYNAMICS

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define and explain the following: (i) Reversible Process, (ii) Property of a thermodynamic system, (iii) Intrinsic and extrinsic properties and (iv) Work done.
b) A chilling unit can maintain a room at constant temperature of 5 ^{0}C by removing heat continuously at the rate of 42 MJ/h. Heat leaks into the room from the surrounding atmosphere at a rate of 4 MJ/h. Calculate the time required to cool a food material kept in the room from 45 ^{0}C to 5 ^{0}C. Consider the specific heat of the food material to be 4.2 kJ/kgK.

2. a) Discuss the application of Zeroeth law in thermometry. What are the reference points for calibration of temperature measuring devices?
b) Write about Joules Experiments. Why PMM1 is not feasible in practice?

3. a) Derive efficiency/ CoP relations for Heat Engine/Heat pump and Refrigerator assuming that they are reversible devices operating on Carnot Cycle.
b) Plot Carnot's Cycle on PV and TS diagrams and derive relations for its efficiency.

4. a) Derive expressions for entropy changes for a closed system for the following cases: (i) Heat a gas at constant volume and (ii) Polytropic process.
b) Air at 15 ^{0}C and 1.05 bar occupies 0.02 m^3. The air is heated at constant volume until the pressure is 4.2 bar, and then cooled at constant pressure back to the original temperature. Calculate the net heat flow to or from the air and the net change in entropy. Sketch the process on a *T-s* diagram.

5. a) Draw the phase equilibrium diagram for a pure substance on (i) *T-s* plot and (ii) *h-s* plot, with relevant constant property lines.
b) A mass of wet steam at a temperature of 165 ^{0}C is expanded at constant quality 0.8 to a pressure of 3 bar. It is then heated at constant pressure to a degree of superheat of 65 ^{0}C. Find the enthalpy and entropy changes during expansion and during heating. Draw the *T-s* and *h-s* diagrams.

6. a) Derive the expression of work transfer for an ideal gas in a reversible isothermal process.
b) The pressure and volume of a gas, during a process, changes from 1 bar absolute and 2 m^3 respectively to 6 bar absolute and 0.4 m^3 respectively. During the process the increase in enthalpy of the gas is 200 kJ. Taking c_v = 10.4 kJ/kgK, calculate c_p, R and ΔU.

7. Derive expressions for following Mixture properties in terms of their individual component properties: Entropy, Enthalpy, Internal energy and Specific heats.

8. a) Write short notes on: (i) Sensible heating (ii) Cooling and dehumidification. Represent the processes on Psychrometric chart.
b) An air-water vapour mixture enters a heater-humidifier unit at 6 ^{0}C, 110 kPa, 52 % RH. The flow rate of dry air is 0.12 kg/sec. Liquid water at 12 ^{0}C is sprayed into the mixture at the rate of 0.0018 kg/sec. The mixture leaves the unit at 32 ^{0}C, 100 kPa. Calculate :
(i) The relative humidity at the outlet and (ii) the rate of heat transfer to the unit.

CODE No.:10BT30401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2015

SEMICONDUCTOR DEVICES AND CIRCUITS

[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) Derive an expression for depletion capacitance and diffusion capacitance in a PN Junction diode
b) Draw V-I characteristics of PN junction diode and explain each term in a Diode current equation

2. a) With circuit and necessary waveforms, explain the operation of Bridge Rectifier.
b) Design a filter for FWR circuit with LC filter to provide an output voltage of 10 Volts with a load current of 200 mA and the ripple is limited to 2%.

3. a) What is early effect? How does it modify the V-I characteristics of a BJT?
b) Define **α** and **β** of a transistor. Derive the relation between them.
c) Give reason for cutoff conditions for Si and Ge transistors are different.

4. a) Draw a BJT self bias circuit and obtain the expression for the stability factor 'S'.
b) A Ge transistor with V_{cc} =16V, R_c=1.5K, β=50, The operating point desired is V_{ce}=8Vand I_c=4mA. If a stability factor S=10 is desired, calculate values of R_1,R_2 and R_e of the circuit.

5. a) Draw the circuit for Darlington pair and derive the expressions for A_i, A_v, R_i and R_o.
b) Derive Millers theorem and dual of Millers theorem.

6. a) With neat structure, explain the principle of operation of depletion MOSFET.
b) Explain drain characteristics of JFET.

7. a) Derive an expression for voltage gain, input impedance and output impedance of CS amplifier at low frequencies.
b) Discuss the concept of biasing of MOSFET's (Both Depletion and Enhancement).

8. Explain the structure and characteristics of SCR also define SCR parameters of
i) latching current ii) holding current.

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CODE No.:10BT30402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2015

PROBABILITY THEORY AND STOCHASTIC PROCESS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. A rifleman can achieve a "Marksman" award if he passes a test. He is allowed to fire six shots at a target's bull's eye. If he hits the bull's eye with atleast five of his six shots he wins a set. He becomes a marksman only if he can repeat the feat three times straight, that is; if he can win three straight sets. If his probability is 0.8 of hitting a bull's eye on any one shot, find the probability of becoming a Marksman.

2. a) A random variable X has the following probability distribution .

x:	0	1	2	3	4	5	6	7
p(x):	0	**k**	**2k**	**2k**	**3k**	$\mathbf{k^2}$	$\mathbf{2k^2}$	$\mathbf{7k^2+k}$

Find

(i) The value of k
(ii) P(**1.5<X<4.5/X>2**) and
(iii) The smallest value of X for which p(**X≤t**)>1/2

b) State the properties of the probability density function.

3. a) For the binomial density, show that mean is equal to Np and variance is Np(1-P).
b) Explain about Transformation of Random Variables of X.

4. The joint space for the two random variables X and Y and corresponding Probabilities are shown in the table. Find and plot (i) $F_{XY}(x,y)$ (ii) marginal distribution functions of X and Y.(iii) Find P(0.5<X<1.5) (iv) P(X≤1,Y≤2) (v) Find P(1<X≤2,Y≤3).

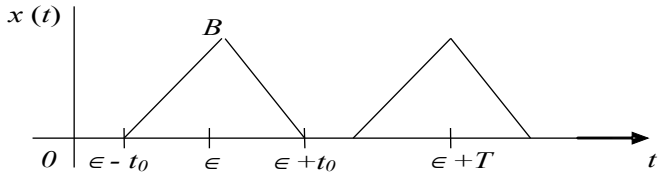
X,Y	1,1	2,2	3,3	4,4
P	0.05	0.35	0.45	0.15

5. a) Show that the variance of the weighted sum of uncorrelated random variables equals the weighted sum of the variances of the random variables.
b) Two random variables X and Y have joint characteristic function

$$\mathbf{\Phi_{X,Y}(\omega_1, \omega_2)= \exp(-2\,\omega_1^2 - 8\,\omega_2^2)}$$

Show that X and Y are zero mean random variables and also X and Y are Correlated.

6. A random process $X(t)$ has periodic sample functions as show in figure ; where B, T and $4t_0 \le T$ are constants but ∈ is a random variable uniformly distributed on the interval (0, T). Find first order density function and distribution function of $X(t)$.



7. a) Derive the expression for PSD and ACF of band pass white noise and plot them.
b) Define various types of noise and explain.

8. a) Derive the relationship between cross power spectrum and cross correlation.
b) Prove that Sxx (ω) = Sxx (-ω)

CODE No.:10BT30403

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2015

SIGNALS AND SYSTEMS

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

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

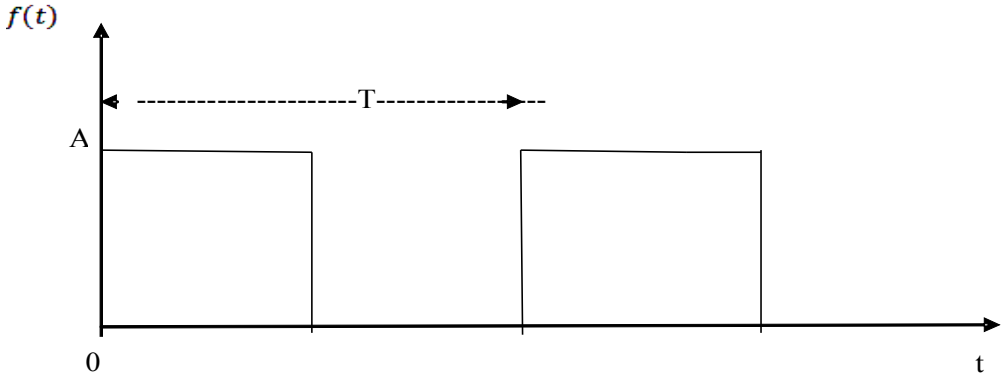
Answer any FIVE questions
All questions carry equal marks

1. a) 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 cos 2t + b sin π t.

2. Obtain the exponential Fourier series of the wave form shown below



3. a) Define signum function and find the fourier transform of it.

b) Find the fourier transform of the given signal sgn(t) cos (100 ***πt***) .

4. Transfer function of a LPF is given by

H (w) = 1, |w| < w_c

0, |w| > w_c

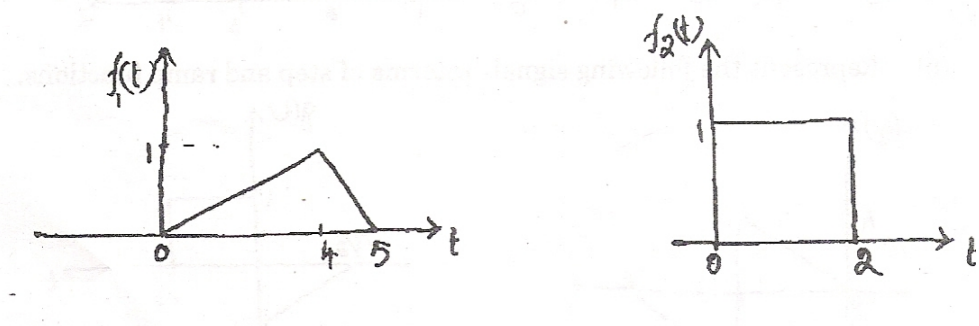
Show that its impulse response is non-causal.

What do you do to make it causal? What is its Physical significance?

5. a) List out all properties of Convolution and correlation

b) Distinguish energy spectral density and Power spectral density.

6. a) Determine the convolution of the following functions graphically.



b) Obtain and sketch the Impulse Response of the system

$$y(t) = x(t - t_0)$$

7. a) State and prove sampling theorem

b) The signal $g(t) = 20\,Cos(50\pi t)\,Cos(60\pi t)$ is sampled at the rate of 100 samples per second.

(i) Determine the spectrum of sampled signal

(ii) Specify cut-off frequency of the ideal reconstruction filter to recover g(t) from its samples

(iii) What is the Nyquist rate for g(t) ?

8. a) Find the Z-Transform for the following signals and plot their ROC

(i) $2^n u(n)$ **(ii)** $2^{-n}\cos(2n)u(n)$

b) Using power series method fin the first five samples of

$$H(Z) = \frac{1}{1 - 4z^{-1} + 6Z^{-2}}$$

CODE No.:10BT30421

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2015

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) Discuss temperature dependence PN diode V-I characteristics.
b) Calculate the factor by which the current will increase in a silicon diode operating at a forward voltage of 0.4 Volts, when the temperature is raised from 25 C to 125 C.

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) 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) Draw the fixed bias circuit and explain the bias stability.
b) What is thermal runaway? Explain necessary conditions for transistor to be thermally stable condition.

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 with neat sketches of enhancement mode of MOSFET characteristics.
b) What are the r_d, g_m and μ .

7. a) Write short notes on RC phase shift oscillator.
b) What are the advantages of negative feedback over positive feedback and prove them.

8. Write a short notes on the following:
a) UJT as a relaxation oscillator.
b) Varactor diode.

CODE No.:10BT30422

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2015

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 following gray numbers to equivalent binary numbers:
   i) 111011
   ii) 101110101
   b) Determine the value of base **x** if $(211)_x = (152)_8$.

2. a) Obtain dual of the following Boolean expressions.
   (i) AB+A(B+C)+B'(B+D) (ii) A+B+A'B'C.
   b) Obtain the compliment of the following Boolean expressions.
   (i) A'B+A'BC'+A'BCD+A'BC'D'E. (ii) ABEF+ABE'F'+A'B'EF.

3. a) Minimize the following expression using K-map and realize using NAND Gates.
   $F(A,B,C,D) = \sum m(0,1,2,9,11) + d(8,10,14,15)$.
   b) Minimize the following expression using K-map and realize using NOR gates.
   $f = \prod M(0,4,6,7,8,12,13,14,15)$.

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) Explain the operation R-S master slave flip flop. Explain its truth table.
   b) Explain about the realization of SR flip-flop, JK flip-flop using D flip-flop.

6. a) Compare the merits and demerits of ripple and synchronous counters.
   b) Design a 4-bit ripple counter using T flip-flops.

7. a) What is ROM? Discuss in brief about different types of ROMs.
   b) Write a brief note on sequential programmable devices.

8. a) What do you mean by hazard? Classify and explain.
   b) Describe the cycles in asynchronous sequential circuits.

CODE No.:10BT30501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2015

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) Write down the De Morgan laws and prove them.
b) For any propositions p, q, r prove the following logical equivalence:
$(p \rightarrow q) \wedge [\sim q \wedge (r \vee \sim q)] \Leftrightarrow \sim(q \wedge p)$.

2. a) Show that $R \wedge (P \vee Q)$ is a valid conclusion from the premises $P \vee Q,\ Q \rightarrow R, P \rightarrow M$ and $\sim M$.

b) What is the first order predicate calculus statement equivalent to the following?

"There is exactly one person whom every body loves"

3. a) Draw the Hasse diagram of the set {1,2,3,6,12}under the partial ordering relation "divides", and indicate those which are totally ordered.
b) Show that the function $f\langle x, y\rangle = x + y$ is primitive recursive.

4. a) If a ,b are any two elements of a group (G ,0) which commute show that
i. a^{-1} and b commute
ii. b^{-1} and a commute and
iii. a^{-1} and b^{-1} commute.
b) Let g be a homomorphism from a group $\langle G,*\rangle$ to a group $\langle H,\Delta\rangle$, and let k be the kernel of g and $H' \subseteq H$ be the image set of g in H. Then G/K is isomorphic to H'.

5. a) Prove that $\mathbf{1^2 + 2^2 + \ldots + n^2 = n(n+1)(2n+1)/6}$ whenever **n** is a positive integer
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) Define the following with example:
(i) null graph (ii) pendent vertex (iii) isomorphic graphs
b) How many vertices in a graph which contains 16 edges and all vertices of degree 2?

8. a) Give the Prims algorithm of generating minimum spanning tree.
b) Give the algorithm for depth first search.

CODE No.:10BT30502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2015

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) Give the definition of data structure. Give its classifications.
b) Explain about quick sort with suitable example. Give its implementation in C.

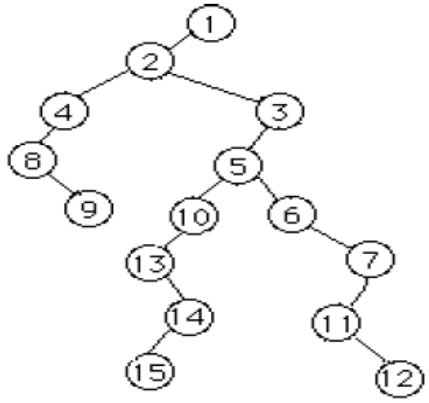
2. Explain about multi linked lists. Give its implementation.

3. Give an algorithm which uses a stack to reverse the given string. Show working of your algorithm to reverse the string "India".

4. *Inorder* traversal and *postorder* traversal of a binary tree are same and is: *ABCDEFGH*. Find the binary tree and give its *preorder* traversal.

5. What is an AVL tree? Explain about the different rotations in AVL trees for balancing with suitable example.

6. Following is the binary tree representation of a tree.



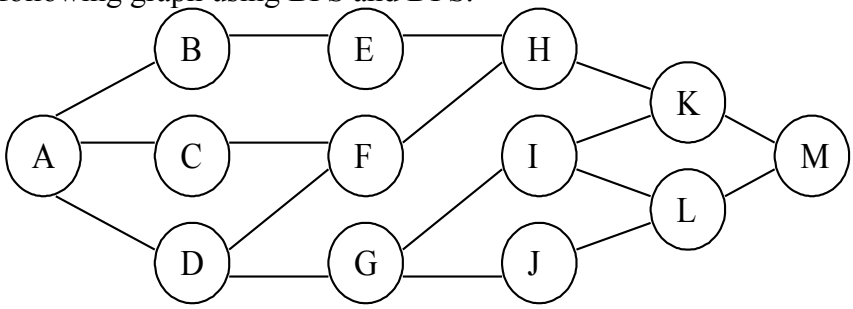
a) Given the following implementation of preorder traversal, list the nodes of the above tree in preorder.

```
void preorder(link n)
{
 link c;
 printf("%d\n", n->key);
 c = n->leftmostChild;
 while (c != NULL)
 {
  preorder(c);
  c = c->rightSibling;
 }
}
```

b) How could you change the above function to print the nodes in postorder? List the nodes of the tree above in postorder.

7. a) Explain about the graph and its properties. Give the ADT for a graph.

b) Traverse the following graph using BFS and DFS.



8. a) Describe about collision in a hash table and various collision resolution strategies.
b) Describe hash tables using chaining. What are its advantages and disadvantages when compared with open addressing?

CODE No.:10BT31001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2015

THERMODYNAMICS AND FLUID MECHANICS

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

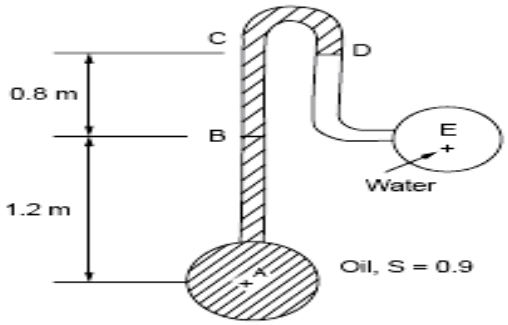
1. a) Explain the concept of temperature scales.
b) Explain the second law of thermodynamics mentioning its applications.

2. Explain the working principle of Rotary and positive displacement compressors.

3. a) Explain with a neat sketch about simple Rankine cycle mentioning its applications.
b) Explain the working principle of any one type of boiler accessories.

4. a) Enumerate different ways of producing refrigeration with neat sketches.
b) Define Thermal Conductivity and Convective Heat transfer coefficient.

5. a) Explain Classification of Manometers and what is Piezometer?
b) An inverted U - tube manometer is fitted between two pipes are shown in the figure below. Determine the pressure at E if P_A = 0.4 bar (gauge).



6. a) Explain the classification of various fluid flows.
b) Determine the stream function for (i) Forced vortex and (ii) Free vortex.

7. What are the methods of dimensional analysis? Describe the Rayleigh's method for dimensional analysis

8. a) Derive an equation of continuity for one dimensional flow.
b) Differentiate between orificemeter and venturimeter.

CODE No.:10BT40404

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC10) Supplementary Examinations November - 2015

SWITCHING THEORY AND LOGIC DESIGN

[Electrical and Electronics 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 mean by self complementary code? Give examples.
b) Express decimal number 8620 in i) BCD; ii) Excess-3; iii) 2421 code.
c) Show that the dual of EX-OR gate is equal to its complement.
d) Explain about error detecting and correcting codes.

2. Simplify the following Boolean expressions using Boolean algebra:
i) AB + AB'C(B'C' + C) + (AC)'
ii) A'BC' + A'BC + AB'C' + ABC
iii) ABC'D' +ABC'D + ABCD' +ABCD
iv) AB + ABC' + A'BC +ABC
v) ABCD + ABCD' +A'BCD +A'BCD'

3. a) Simplify the Boolean function 'F' using don't care conditions 'd' in (i) SOP form (ii) POS form F=A'B'D'+A'CD+A'BC, d=A'BC'D+ACD+AB'D'
b) Given F(A,B,C,D,E) = $\sum$ (0,2,4,6,9,11,13,15,17,21,25,27,29,31). Obtain the simplified SOP form using k-map method.

4. a) What is Full adder? Implement full adder using 2 half adders.
b) Realize F=X'Z+WXY' using 4X16 decoder.
c) Implement Inverter using multiplexer.

5. Draw the internal construction of PLA having 3 inputs, 3 product terms and 2 output and realize the following functions using it. $F_1 = \Sigma m\ (0,1,3,5)$ and $F_2 = \Sigma m\ (0,3,5,7)$.

6. a) Draw a 3 bit Jhonson counter and explain.
b) Design a 3 bit asynchronous UP/DOWN counter

7. a) Discuss about capabilities and limitations of finite state machine.
b) A sequential circuit has two JK flip-flops A and B and one input x. The circuit is described by the following flip-flop input equations :
$\mathbf{J_A = x}$ $\mathbf{K_A = B'}$
$\mathbf{J_B = x}$ $\mathbf{K_B = A}$
i) Derive the state equation **A(t+1)** and **B(t+1)** by substituting the input equations for the J and K variables.
ii) Draw the state diagram of the circuit

8. a) Explain control and data path interaction in algorithmic state machines.
b) Draw the ASMD charts for the following state transition.
i) If ***x=1***, control goes from state 'S_1' to state 'S_2';
ii) If ***x=0***, generate a conditional operation $R \leq R + 2$ and go from S_1 to S_2.

CODE No.:10BT3BS02

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016
ENVIRONMENTAL SCIENCES

[Electrical and Electronics Engineering, Mechanical 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) Write about the role of government and non-government organizations in promoting environmentalism.
b) Write a note on the Interrelationships between the components of atmosphere.

2. a) Write an essay on non renewable resources of energy.
b) Write a detailed note on mining.

3. a) Define and explain in detail about ecological successions.
b) Write a short note on pond, lake and river ecosystems.

4. a) Define the concept of Sustainable Ecosystem.
b) What are the adverse effects of deserts?

5. a) Explain about the Disaster Management.
b) Explain about Nuclear Pollution.

6. a) Describe the Fukishima Disaster of Japan and lessons to be learnt form the incident.
b) Write a note on the following:
i) Wild life Protection Act. ii) Green house gases.

7. What are the Green house gases? Explain Global warming.

8. Write short notes on:
i) In-situ conservation.
ii) Ex-situ conservation.

CODE No.:10BT4EC01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

OPTIMIZATION TECHNIQUES

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. A manufacturing firm produces two products A and B using 2 limited resources. The maximum amount of resource 1 available per week is 1000 and the maximum amount of resource 2 is 250. The production of one unit of A requires 1 unit of resource 1 and 0.2 unit of resource 2 and the production of one unit of B required 0.5 units of resource 1 and 0.5 units of resource 2. The unit cost of resource 1 is (0.375 - 0.00005 X_1), where X_1 is the number of units of resource 1 used. The unit cost of resource 2 is (0.75 - 0.0001 X_2), where X_2 is the number of units of resource 2 used. The selling prices of one unit of A and B can be taken as:

$P_A = 2 - 0.0005\ X_A - 0.00015\ X_B$

$P_B = 3.5 - 0.0002\ X_A - 0.0015\ X_B$

Where X_A and X_B are the number of units sold for products A and B respectively. Assuming that the firm is able to sell all units that it manufactures, formulate the problem of maximizing the profit over a week.

2. Solve the following non-linear programming problem using Lagrange multipliers technique:

Minimize $Z = x_1^2 + x_2^2 + x_3^2$

Subject to $x_1 + x_2 + x_3 = 2$

$5x_1 + 2x_2 + x_3 = 5$

$x_1, x_2, x_3 \geq 0$

3. Solve by simplex method the following LP problem.

Minimize $\mathbf{Z = x_1 - 3x_2 + 3x_3}$

Subject to $\mathbf{3x_1 - x_2 + 2x_3 \leq 7,}$

$\mathbf{2x_1 + 4x_2 \geq -12}$

$\mathbf{4x_1 + 3x_2 + 8x_3 \leq 10}$

$\mathbf{x_1, x_2, x_3 \geq 0}$

4. Solve the following assignment problem.

	1	**2**	**3**	**4**	**5**
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

5. Max $\mathbf{f(x) = -3x^2 + 21.6x + 1.0}$ with a minimum resolution of 0.5 over six functional evaluation. The optimal value of **f(x)** is assumed to lie in the range $\mathbf{0 \leq x \leq 25}$.

6. Minimize $f = 4x_1^2 + 3x_2^2 - 5x_1x_2 - 8x_1$ starting from the point (0, 0) using Powell's method. Perform four iterations.

7. Minimize $f(x) = (x-1)^2$

Subject to $g_1(x) = 2 - x \leq 0$

$g_2(x) = x - 4 \leq 0$

by interior penalty function method.

8. In a cargo loading problem, there are four items of different per unit weight and value as given below:

Item, i	**Weight / Unit, w_i**	**Value / Unit, v_i**
1	1	1
2	3	5
3	4	7
4	6	11

The maximum cargo load is restricted to 17 units. How many units of each item be loaded to maximize the value?

CODE No.:10BT4HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

MANAGERIAL ECONOMICS AND PRINCIPLES OF ACCOUNTANCY

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

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

Answer any FIVE questions
All questions carry equal marks

1. Explain the nature and scope of managerial economics.

2. Explain any four concepts of Cost.

3. What is meant by Perfect Competitive Market? Explain how price is determined in such markets.

4. Explain the difference between sole trader and partnership.

5. What do you mean by accounting concepts? Explain conventions.

6. From the following trial balance of Shri Ram prepare Trading and Profit & Loss A/c. for the year ending 31st Dec, 2015 and balance sheet as on that date.

	Dr. Rs.	Cr. Rs.
Buildings	15,000	
Capital A/c		50,000
Purchases and sales	15,000	40,000
Opening stock (1-1-2011)	5,000	
Debtors and creditors	10,000	6,000
Drawings	6,000	
Returns	2,000	500
Carriage Inwards	2,500	
Salaries	8,000	
Wages	1,500	
Insurance	1,000	
Plant & Machinery	15,000	
Bills	8,000	2,000
Carriage outwards	2,000	
Cash balances	3,500	
Furniture	4,000	

Adjustments:
i) Closing stock was valued at Rs. 12,000.
ii) Depreciation on Plant and Furniture is 10%.

7. Calculate payback period from the following initial outlay Rs. 60,000.

Year	CF of project A	CF of project B
1	10,000	20,000
2	20,000	20,000
3	30,000	20,000
4	40,000	20,000
5	50,000	20,000

8. What is the significance of capital and explain various types of capital?

CODE No.:10BT40501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

COMPUTER ARCHITECTURE AND ORGANIZATION

[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) Give the operational concepts of a digital computer.
b) Multiply 10111 with 10011 using booths algorithms.

2. a) Design a circuit which can be used to transfer data from any register to any other register out of four 4-bit registers A,B,C and D.
b) Explain different instruction formats.

3. a) How is microprogramming concept is used to implement the control unit?
b) Explain Micro program sequencer.

4. a) Explain pipeline processing.
b) What are array processors?

5. a) Explain the different types of mapping techniques of cache memory.
b) Explain asynchronous mode of data transfer in serial communication.

6. a) Describe the USB architecture with the help of a neat diagram.
b) Write shot notes on Input-Output Processor (IOP).

7. Write short notes on:
i) Cache Coherence
ii) Shared Memory Multiprocessors.

8. Explain in detail about CISC architecture.

CODE No.:10BT41301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

CONTROL SYSTEMS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the characteristics of feedback control system.

b) Define transfer function. Determine the transfer function $V_0(s)/V_i(s)$ of given electrical network shown in Fig.1

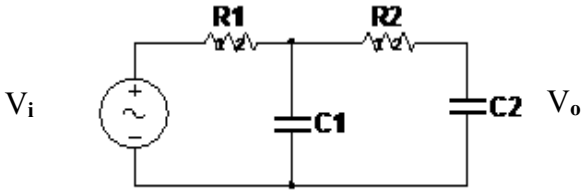


Fig.1

2. a) An armature controlled **dc** motor is driving a load. The input voltage is 5V. The speed at t = 2sec is 30rad/sec and the steady speed is 70rad/sec when t tends to ∞. Determine the transfer function $\frac{\omega(s)}{V(s)}$?

b) Draw the block diagram and signal flow graph for the above system.

3. A unity feedback control system has $G(s) = \frac{100}{s(s+5)}$. If it is subjected to unity step input.

Determine: i) Damped frequency of oscillation. ii) Maximum peak overshoot.
iii) Time to reach for first overshoot. iv) Settling time.

4. a) Determine the relative stability of the following unity-feedback control systems by using the Routh-Hurwitz criterion.

i) $G(s) = \frac{65+33s}{s^2(s+20)}$ ii) $G(s) = \frac{24}{s(s^2+10s^2+35s+50)}$.

b) A feedback system with a loop transfer function is described by $G(s) = \frac{k}{(s+20)(s^2+7s+12)}$.

Find the breakaway point on the real axis. Also find the asymptote centroid.
Find the value of K at the breakaway point.

5. a) What are the advantages of frequency response?

b) Explain about frequency domain specification.

6. a) Define phase cross over frequency and gain margin.

b) Develop the Polar plot of the system given as $G(s) = \frac{1}{(1+s)(1+4s)}$ and determine whether their plots cross real axis? .

7. a) What are the types of compensations available?

b) Explain the procedure to design a lead compensation using Bode plots.

8. Given the transfer function $G(s) = \frac{2}{(s+2)^2} + \frac{4}{(s+2)} + \frac{3}{s+1}$. Write the state variable formulation in Jordan canonical form.

❀ ❀ ❀

CODE No.:10BT50101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

STRUCTURAL ANALYSIS - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. A train of wheel loads shown in Fig.1 crosses a span of 43m. Calculate the maximum positive and negative shear at mid-span of the beam. Also calculate the absolute maximum bending moment.

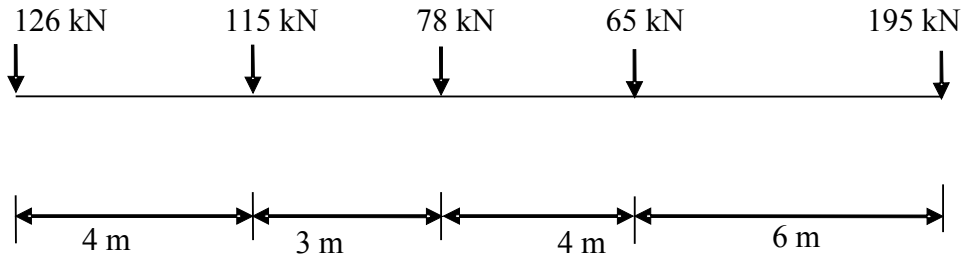


Fig.1

2. Two point loads of 100 kN and 200 kN spaced 3m apart cross a girder of span 15m from left to right with the 100 kN load leading. Draw the influence line for S.F and B.M and find the value of max S.F and B.M at a section D, 6m from the left hand support. Also find the absolute max B.M due to the given load system.

3. Analyse the continuous beam shown in Fig.2 using Moment distribution method and draw shear force and bending moment diagrams. Locate and find the distances of the points of contra-flexure from supports. Draw elastic curve.

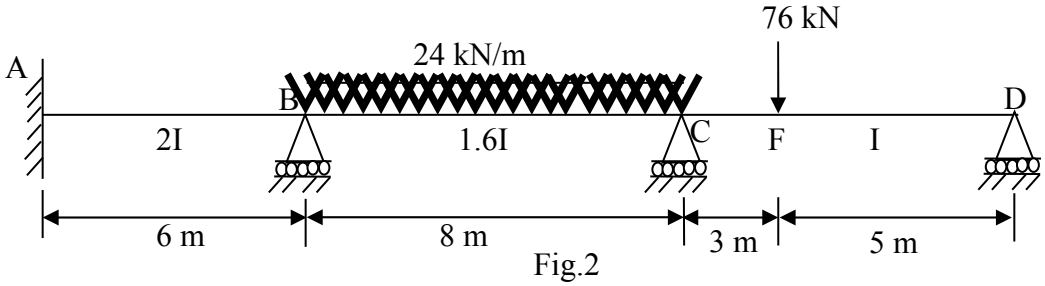


Fig.2

4. Analyse a portal frame of bay length 4m, height 5m, subjected to a UDL of 5kN/m on the beam. Sketch the BMD and SFD.

5. Sketch the BMD of the frame shown in Fig.3, use Kanis method. AB=10m; BC=6m and CD = 10m. UDL is 30kN/m. EI of members is same.

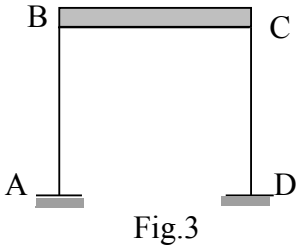


Fig.3

Fig.3

6. Calculate the vertical deflection at the point E, for the truss shown in Fig.4. All the members have equal cross-sectional areas of 1255mm^2 and the modulus of elasticity of members = 203 GPa.

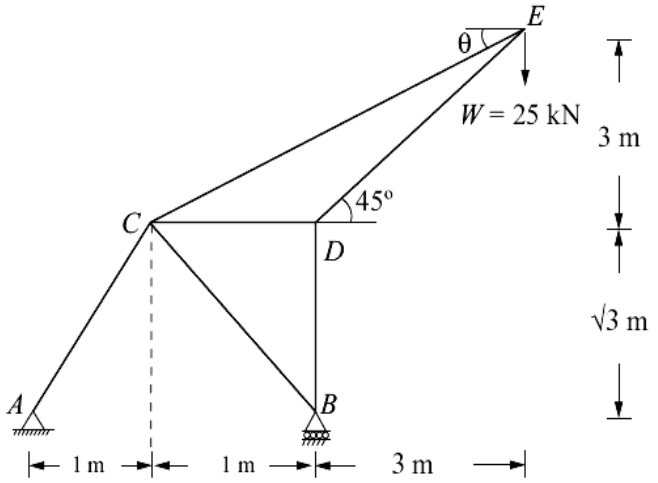


Fig.4

7. Analyse the truss shown in Fig.5. Determine the forces in all the members. AE is constant.

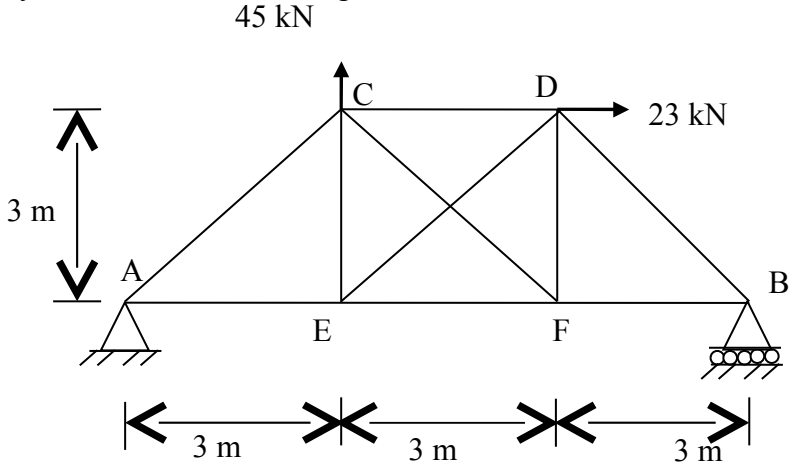


Fig.5

8. Analyse the portal frame shown in Fig.6 and draw BMD for the same. Adopt Cantilever method. Each Horizontal load is 50kN. Height of each column is 3m.

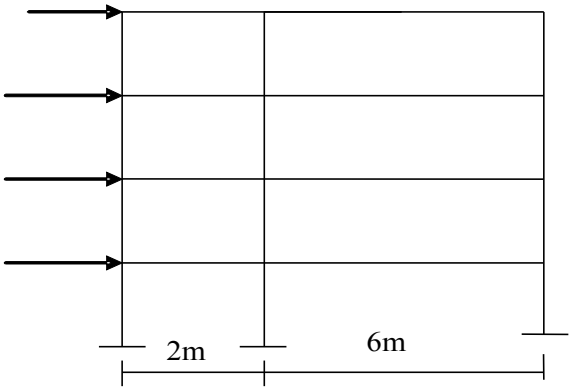


Fig.5

Fig.6

CODE No.:10BT50102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

REINFORCED CEMENT CONCRETE STRUCTURES - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Design a doglegged stair case in a room with clear dimensions 2.4m × 4.8 m and the storey height is 3.2 m. The live load is 3 kN/m^2. Adopt M20 concrete and Fe 415 steel. Also draw the reinforcement details.

2. Design a combined footing with strap beam for two columns 400 m × 400 m spaced at 4.5m centre-to-centre. Each column has to support an ultimate load of 800 KN. The safe bearing capacity of the soil is 150 kN/m^2. Draw the reinforcement details.

3. A pile cap connecting 4 RC piles of 300mm × 300mm is to be designed to support a reinforced concrete column 400mm × 400mm carrying a service load of 2000 kN. The piles are located parallel to the column faces with their centres located 800mm from the centre of the column. Using M20 grade concrete and Fe 415 grade steel, design the pile cap and sketch the details of reinforcements.

4. A cantilever retaining wall is retaining earth to a height of 6m. The density of earth is 18 kN/m^3 and the angle of internal friction is 30^0. The safe bearing capacity of soil is 185 kN/m^2. The coefficient of friction between earth and the retaining wall is 0.5. Design the heel of the retaining wall and draw the reinforcement details. Use M 25 grade of concrete and Fe 415 steel.

5. The roof of a 100 kLit capacity overhead circular water tank consists of a spherical dome of 8m base diameter with rise of 1.25m. The superimposed load may be taken equivalent to vertical load of 1 kN/m^2 of the dome surface. Design the dome and its ring beam. Use M20 grade concrete and Fe 415 grade steel.

6. Design a circular tank for capacity 700 kLit. The walls are flexible and the tank rests on firm ground.

7. A curved beam is in the form of a continuous circle in plan with a radius of 4m is supported on 6 columns 250mm **x** 250mm. The beam carries a UDL of 40 kN/m length, inclusive of its own weight. Design the beam using M20 grade concrete and Fe 415 grade steel. Sketch the details of reinforcement.

8. a) What are the advantages and disadvantages of prestressed concrete?
b) A prestress concrete beam of rectangular cross section carries UDL of 10 kN/m over a span of 10m including its self weight. Design the section it f_{ck}= 40 and characteristic strength of prestressing steel is 1500 MPa.

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CODE No.:10BT50103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

ENGINEERING HYDROLOGY

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the hydrologic cycle with the help of a neat sketch.
b) What do you understand by precipitation?

2. a) Discuss with a neat sketch, the construction and working of a tipping bucket type of rain gauge.
b) In a certain river basin, there are four rain gauge stations with normal annual precipitations as 800, 520, 440 and 400mm respectively. Check whether this number of rain gauges is sufficient to limit the error in the mean value to 12%. If not, suggest a suitable measure to achieve the desired error limit.

3. a) Define Ø-index and W-index and bring out the difference between them. How is Ø -index determined from the rainfall hyetograph?
b) What are the factors to be considered in locating a stream gauging site?

4. a) Write a note on different components of a hydrograph and separation of base flow.
b) Draw the hyetograph and rainfall mass curve for the data given below, pertaining to a storm of 210 minutes duration.

Time since start of the storm (mins)	30	60	90	120	150	180	210
Incremental rainfall in the time interval (cm)	1.75	2.25	6.00	4.50	2.50	1.50	0.75

5. a) Why is base flow separated from total runoff? Describe any two methods of separating the base flow from the total runoff.
b) Given below are the ordinates of a 4 h 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) Define unit hydrograph. State its applications, limitations and assumptions.
b) Rainfall of magnitudes 3.8cm and 2.8cm occurring on two consecutive 4 hours durations on a catchment of area 27sq.km produced the following hydrograph of flow at the outlet of the catchment. Estimate the rainfall excess and Ø -index.

Time from start of Rainfall (hr)	-6	0	6	12	18	24	30	36	42	48	54	60	66
Observed flow (cumec)	6	5	13	26	21	16	12	9	7	5	5	4.5	4.5

7. a) Explain the terms storage coefficient and coefficient of transmissibility.
b) A well with a radius of 0.5m penetrates completely a confined aquifer of thickness 40m and permeability 30m/day. The well is pumped so that the water level in the well remains at 7**.**5m below the original piezometric surface. Assuming that the radius of influence is 500m, compute the steady state discharge from the well.

8. a) A 30cm well completely penetrates an unconfined aquifer of saturated depth 40m. After a long period of pumping at a steady rate of 1500 lpm, the drawdown in two observation wells 25 and 75m from the pumping well were found to be 3.5 and 2.0m respectively. Determine the transmissivity of the aquifer. What is the drawdown at the pumping well?
b) Explain how the yield of an open well can be determined using recuperation test.

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CODE No.:10BT50104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

SOIL MECHANICS

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define: (i) Bulk density (ii) Relative density (iii) Dry density
b) The following data is available in connection with the construction of an embankment.
Soil from borrow pit: $\gamma = 17.5$ kN/m^3 and w = 12%
Soil after compaction: $\gamma = 20.0$ kN/m^3 and w = 18%
Hence for every 100 m^3 of compacted soil of the embankment, estimate the quantity of soil to be excavated from the borrow pit and the amount of water to be added.

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) Derive the equation for coefficient of permeability used in the falling head permeability test.
b) Find the average horizontal and vertical permeabilities of a soil mass made up of three horizontal layers. The first and second layers have the same thickness of 0.5m each. The third layer is 1.0m thick. The coefficient of permeabilities of first, second and third layers respectively are 1×10^{-3}, 2×10^{-2} and 5×10^{-4} cm/sec.

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 2.5 m thick with unit weight 18 kN/m^3 and the bottom layer is 3.5 m thick with saturated unit weight 21 kN/m^3. The water table is at a depth of 3.5 m from the surface and the zone of capillary saturation is 1m above the water table. Draw the total pressure, neutral pressure and effective pressure variation diagrams.

5. a) Distinguish between Boussinesq's and Westergaard's theory for stress distribution in soils.
b) A strip load of considerable length and 1.5m width transmits a pressure of 150 kN/m^2 to the underlying soil. Determine the vertical stress at 0.75m depth below the footing if the point lies i) directly below the centre of the footing and ii) directly below the edge of the footing.

6. a) What is the effect of compaction on engineering properties of soils?
b) How to measure the water content of the filed soil with the help of Proctor-Needle method? Discuss in detail.

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 200 kN/m^2 to 400 kN/m^2. Calculate the coefficient of consolidation if coefficient of permeability is 8×10^{-8} cm/s.

8. a) Explain, with a neat diagram, the conduct of a triaxial shear test.
b) The following results were obtained from a laboratory triaxial test.

Cell pressure (kg/cm^2)	1.0	1.5	2.0
Deviator stress (kg/cm^2)	2.02	2.18	2.37
Pore pressure (kg/cm^2)	0.41	0.62	0.70

Determine effective shear strength parameters of the soil.

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CODE No.:10BT50105

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

ENGINEERING GEOLOGY

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Define the term 'weathering'. Give the classification of weathering highlighting its relevance to civil engineering studies.

2. Give the hardness scale of the minerals. Describe the physical properties of the following economic minerals:
   i) Hematite,
   ii) Graphite,
   iii) Magnesite,
   iv) Bauxite.

3. Briefly explain the process of formation of sedimentary rocks. Enumerate their structures and textures in detail with neat diagrams.

4. What is Strike and Dip? Elucidate the classification of folds with neat sketches.

5. Detail the causes and effects of the landslides. Elucidate the precautions to be taken to control them.

6. What are seismic methods? Outline the procedure for estimation of thickness of formations using seismic refraction method. Add a note on the field arrangement for seismic refraction survey.

7. What are Dams and how are they classified? Discuss fully the geological investigations for an arch dam.

8. Draw the neat sketch of Traffic tunnel and label its parts. Write about head race and tail race pressure tunnels.

CODE No.:10BT50201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

POWER ELECTRONICS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) With elementary circuit diagram, explain the static anode-cathode characteristics of SCR.
b) Briefly describe the different turn-on methods of a thyristor.

2. a) Explain the operation of UJT firing circuit.
b) Explain the operation of Class-A commutation circuit.

3. a) Explain the necessity of snubber circuit and derive its parameters.
b) A SCR can be triggered with a dv/dt of 220V/μs. If the charging current flowing through the junction is 5mA, calculate the equivalent capacitance of depletion layer.

4. a) Explain the principle of operation of single phase half wave circuit with RL load and freewheeling diode with neat sketches. Derive the expression for load voltage.
b) A 230V, 50Hz, one-pulse SCR controlled converter is triggered at a firing angle of 40° and the load current extinguishes at an angle of 210°. Find the circuit turn off time, average output voltage and the average load current for R = 5Ω and L = 2mH.

5. Explain the operation of three-phase semi converter with RL load with neat sketches.

6. a) Explain the operation of single-phase step-up cyclo-converter.
b) A single-phase bridge type cyclo-converter has input voltage of 230V, 50Hz and load of R = 10Ω, output frequency is one-third of input frequency. For a firing angle delay of 30°, calculate RMS value of output voltage and RMS current of each converter.

7. a) With the help of circuit diagram, explain the working of step-up chopper.
b) With circuit diagram and load voltage waveform, explain the different modes of operation of AC chopper.

8. Discuss the working of a single-phase parallel inverter and its commutation process with neat circuit diagram and necessary wave forms.

CODE No.:10BT50202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

AC MACHINES

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the power angle characteristics of cylindrical rotor alternator.
b) A 480V, 6- pole, star connected 50Hz cylindrical rotor synchronous generator has negligible armature resistance and 1.0ohm per phase synchronous reactance. The full load armature current is 60A. Total losses at full-load are 4.2KW. The field current has been so adjusted that terminal voltage at no-load is 480V. Find i) speed ii) terminal voltage and regulation at full-load p.f. 0.8 leading iii) terminal voltage and regulation at full-load unity p.f , iv) efficiency at full-load 0.8 p.f. lagging.

2. Derive the phasor diagram of a salient rotor alternator. What is the effect of armature reaction and how it is included in phasor diagram? Draw phasor diagram for lagging, unity and leading power factors.

3. a) With neat diagrams explain determination of regulation by synchronous impedance method.
b) A 3-phase synchronous generator has per phase direct axis synchronous reactance of 1.0pu and a quadrature axis synchronous reactance of 0.65pu. Draw the phasor diagram of the machine when operating at full load at a p.f of 0.8 lagging and estimate from there ;
i) the load angle
ii) pu no-load emf. Neglect armature resistance.

4. a) Mention the need for parallel operation of alternators and state the conditions for parallel operation of alternators.
b) A 5 MVA, 6 pole alternator runs at 1000 r.p.m. on 3300V busbars. The synchronous reactance is 20%. Calculate the synchronizing power and torque per mechanical degree of displacement when alternator is supplying full load at 0.8 p.f lagging.

5. a) With neat diagram explain the operation of synchronous motor at " Constant load with variable excitation".
b) A 3 Phase synchronous motor absorbing 60 KW input is connected in parallel with a load of 240 KW. The load has power factor of 0.8 lagging. If the combined power factor is observed to be 0.9 lagging,
Calculate i) Leading reactive power supplied by synchronous motor.
ii) Power factor of synchronous motor.

6. Draw and explain the slip - torque characteristics of the following induction motors.
i) Capacitor start - Capacitor run ii) Split - phase

7. a) Discuss the various methods of speed control of universal motor.
b) Explain why a series motor never be operated on no-load? List the applications of AC series motor.

8. a) Briefly explain the construction and working principle of permanent magnet stepper motor.
b) Why AC servomotors are best suited for low power applications than to DC motors.

CODE No.:10BT50203

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

ELECTRICAL POWER TRANSMISSION

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define P.U method and explain about selection of base values.
b) A 10 MVA, 10KV equipment has an impedance of 10Ω find its
i) P.U impedance ii) **%** impedance

2. a) Explain the classification of transmission lines.
b) Explain why ABCD parameters are used for evaluating performance of a transmission line.

3. A a 3-**φ**, 50Hz transmission line has conductance of section 90mm² and effective diameter of 1Cm and one placed at the vertices of an equilateral triangle of a single 1meter the line is 20Km long and delivers a load of 10MW at 33KVand 0.8p.f . Neglect the capacitance and assume temperature of 20 ^{0}C, determine the efficiency and **%** regulation of line.

4. a) What is traveling wave? Explain the development of such a wave on overhead line.
b) An overhead transmission line with surge impedance 400 ohms is 300km long. One end of this line is short-circuited and at the other end a source of 11kV is suddenly switched in. Calculated the current at the source end 0.005sec after the voltage is applied.

5. What is attenuation constant and wave length? Write short notes on each of them.

6. a) Explain about various types of insulators used for overhead transmission lines.
b) Describe how static shielding improves string efficiency in transmission lines.

7. a) Explain the effect of wind and ice on weight of the conductor. How are they accounted?
b) For a overhead line span length is 185m, difference in levels of supports is 6.5m, conductor diameter 1.82cm, weight per unit length of conductor 1.5 kg and wind pressure of 39 kg/m² of projected area. If the maximum tensile strength of the conductor is 4250 kg/cm² and safety factor 5, calculate the sag.

8. a) Draw the cross-section of a 3-core belted high voltage cable and describe its various parts.
b) A 33kV 3-phase underground cable, 4 km long, uses three single-core cable. Each of the conductors has a diameter of 2.5 cm and radial thickness of insulation is 0.5 cm the relative permittivity of the dielectric is 3.0.

Determine:
i) Capacitance of the cable per phase and charging current per phase.
ii) Total charging KVAR.

CODE No.:10BT50301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

THERMAL ENGINEERING - II

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Dry and saturated steam at a pressure of 11 bar is supplied to a turbine operating on Rankine cycle and expanded isentropically to a pressure of 0.07 bar.
Calculate: i) Heat supplied. ii) Change of entropy during heat rejection.
iii) Heat rejected. iv) Theoretical thermal efficiency.
b) Explain the Reheat cycle with the help of a schematic diagram.

2. a) Explain with neat sketches the construction and working of any two fire tube boilers.
b) How much air is used per kg of coal burnt in a boiler having chimney of 32.3m height to create a draught of 19mm of water column when the temperature of flue gases in the chimney is 370°C and the temperature of the boiler house is 29.5°C ?

3. a) Define critical pressure ratio for the nozzle of the steam turbine. Obtain analytically its value in terms of the index of expansion.
b) Derive an expression for the steam discharged through nozzle.

4. a) A single row impulse turbine develops 132.4 kW at a blade speed of 175 m/s, using 2 kg of steam per sec. steam leaves the nozzle at 400 m/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 turbines.

5. a) In a Parson's turbine running at 1500 r.p.m., the available enthalpy drop for an expansion is 65 kJ/kg. If the mean diameter of the rotor is 1m, find the number of rows of moving blades required. Assume stage efficiency as 80%, blade outlet angle is 20° and speed ratio is 0.7.
b) Define the term "degree of reaction" for a reaction turbine and derive an expression for the same.

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. a) Explain the Closed Cycle Gas turbine with the help of neat sketch.
b) In a gas turbine power plant, operating on a Joule cycle, air is compressed from 1 bar and 15°C through a pressure ratio of 6. It is then heated to727°C in a combustion chamber and expanded back to a pressure of 1 bar. Calculate the work done, cycle efficiency and work ratio. Assume isentropic efficiencies of the turbine and compressor as 90% and 85% respectively.

8. a) Explain the working principle of turbo-prop engine employed in air crafts with the help of a neat diagram.
b) What are the advantages and disadvantages of Rocket engines?

CODE No.:10BT50302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

DYNAMICS OF MACHINERY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Draw the free-body diagrams of IC engine mechanism with constrained forces.
b) The connecting rod of an IC engine is 450mm long and has a mass of 2 kg. The center of mass of the rod is 300mm from the small end and its radius of gyration about an axis through this center is 175mm. The mass of the piston and the gudgen pin is 2.5kg and the stroke is 300mm. The cylinder diameter is 115mm. Determine the magnitude and the direction of the torque applied on the crank shaft when the crank is 40° and the piston is moving away from the inner dead centre under an effective gas pressure of 2 N/mm^2. The engine speed is 1000 r.p.m.

2. A supported between two bearings on a shaft of negligible weight has a mass of 80 kg and a radius of gyration of 300mm. The distances of the disk from the bearings are 300mm to the right from the left-hand bearing. The bearings are supported by thin vertical cords. When the disc rotates at 100 rad/s in the clockwise direction looking from the left-hand bearing, the cord supporting the left-hand side bearing breaks. Find the angular velocity of precession at the instant the cord is cut and discuss the motion of the disk.

3. What is the advantage of a self-expanding shoe brake? Derive the relation for the friction torque for such a brake.

4. A single cylinder steam engine 25cm stroke, 350 r.p.m has reciprocating masses (including the portion of connecting rod) of 125 kg. The connecting rod has a mass of 175 kg and is 50cm long. Its centre of gravity is 20cm from the crank pin and the movement of Inertia about an axis through the centre of gravity perpendicular to the plane of motion is 5 kgm^2. The crank is 30^0 from the inner dead centre and the piston is moving towards the shaft. Calculate:
i) The cross-head guide reaction due to inertia of the reciprocating parts.
ii) The total kinetic energy of the connecting rod.

5. a) What are the differences between Porter and Proell Governors? Why is the speed range of Proell governor is less than that of a similar Porter type?
b) The lengths of the upper and lower arms of a Porter governor are 200mm and 250mm respectively. Both the arms are pivoted on the axis of the rotation. The central load is 150N, the weight of each ball is 20N and the friction of the sleeve together with the resistance of the operating gear is equivalent to a force of 30N at the sleeve. If the limiting inclinations of the upper arms to the vertical are 30° and 40°, determine the range of speed of the governor.

6. The reciprocating masses of the three cylinder engine are 4.1, 6.2 and 7.4 tonnes respectively. The centre lines of the three cylinders are 5.2m; 3.2m and 1.2m from the fourth cylinder. If the cranks for all the cylinders are equal, determine the reciprocating mass of the fourth cylinder and the angular position of the cranks such that the system is completely balanced for the primary force and couple. If the cranks are 0.8m long, the connecting rods 3.8m and the speed of engine 75 r.p.m, find the maximum unbalanced secondary force and the crank angle at which it occurs.

7. a) Define damping coefficient, critical damping coefficient and damping factor.
b) A gun barrel weighs 300 kg and has a recoil spring of stiffness 250 N/mm. The barrel recoils 0.8 m on firing. Determine the critical recoil velocity of the gun, critical damping coefficient of the dashpot engaged at the end of the recoil stroke.

8. a) Explain Maxwell's reciprocal theorem. .
b) Explain one method how the natural frequency of multi-degree system is determined.

CODE No.:10BT50303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

MACHINE TOOLS

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is meant by built-up-edge? With a neat sketch, explain the formation of a built up edge.
b) A bar of 75mm diameter is reduced to 73mm by a cutting tool while cutting orthogonally. If the mean length of the cut chip is 73**.**5mm, find the cutting ratio. If the rake angle is 15 degrees, what is the shear angle?

2. a) Explain the methods used for the generation of threads on a lathe.
b) Briefly explain with neat sketches, the types of work holding devices that are commonly employed in automatic lathes.

3. a) Distinguish between shaper, planner and a slotter.
b) With the help of neat sketch, explain any quick return motion mechanism of shaper.

4. a) List out various types of drilling machines and explain the operations performed on drilling machine.
b) Explain schematic diagram of Jig boring machine and mention advantages and limitations.

5. a) Differentiate between up milling and down milling and explain why the diameter of a face milling cutter is wider than the work piece.
b) Explain what is indexing and the working of a universal dividing head.

6. a) What are the various types of grinding machines? Give the applications of each variety of grinding machines.
b) Describe the dressing and balancing requirements in grinding.

7. a) Explain honing and lapping operations and list their applications.
b) What is a broach? Explain different types of broaching methods.

8. Explain the following:
i) Turning fixtures.
ii) Indexing fixtures.
iii) Grinding fixtures.

CODE No.:10BT50304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

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 is *Design*? What are the qualities of a good design?
b) What is meant by optimum design? Give an example.

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 700 MPa is subjected to static loads consisting of bending moment of 10 kN-m and a torsional moment 30 kN-m. Determine the diameter of the shaft using two different theories of failure and assuming a factor of safety of 2. Take E = 210 GPa and Poisson's ratio = 0.25.

3. A transmission shaft of cold drawn steel 27Mn2 (S_{ut} =500N/mm^2 and S_{yt} =300 N/mm^2) is subjected to a fluctuating torque which varies from -100 N-m to + 400 N-m, the factor of safety is 2 and the expected reliability is 90%. Neglecting the effect of stress concentration, determine the diameter of the shaft. Assume the distortion energy theory of failure.

4. a) What is an eccentric riveted joint? Explain the method adopted for designing such a joint.
b) A single riveted lap joint is made in 10 mm thick plates with 25 mm diameter rivets. Determine the strength of the joint, if the pitch of rivets is 60 mm. Take σ_t = 120 MPa; τ = 90 MPa and σ_c = 160 MPa.

5. A mild steel cover plate is to be designed for an inspection hole in the shell of a pressure vessel. The hole is 120 mm in diameter and the pressure inside the vessel is 6 N/mm^2. Design the cover plate along with the bolts. Assume allowable tensile stress for mild steel as 60 MPa and for bolt material as 40 MPa.

6. Design a *knuckle joint* to connect two rods which are to transmit a load of 45kN. Take the allowable stresses in tension, shear and crushing, respectively, as 70MPa, 35MPa and 150MPa. Sketch the designed joint.

7. a) Discuss the effect of keyway on:
i) strength of shaft. ii) torsional rigidity of shaft.
b) Determine the inside and outside diameters of a hollow shaft, which will re-place a solid shaft of diameter 50mm. Both the shafts are made of the same material. The hollow shaft should be equally strong in torsion, yet the weight should be half of the solid shaft.

8. Design and draw a cast iron flange coupling for a mild steel shaft transmitting 100 KW at 250 r.p.m. The allowable shear stress in the shaft is 40 MPa and the angle of twist is not exceed 1° in a length of 20 diameter. The allowable shear stress in the coupling bolts is 30 MPa.

CODE No.:10BT50305

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

INDUSTRIAL ENGINEERING AND MANAGEMENT

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain systems approach to management.
b) Explain Taylor's scientific management.

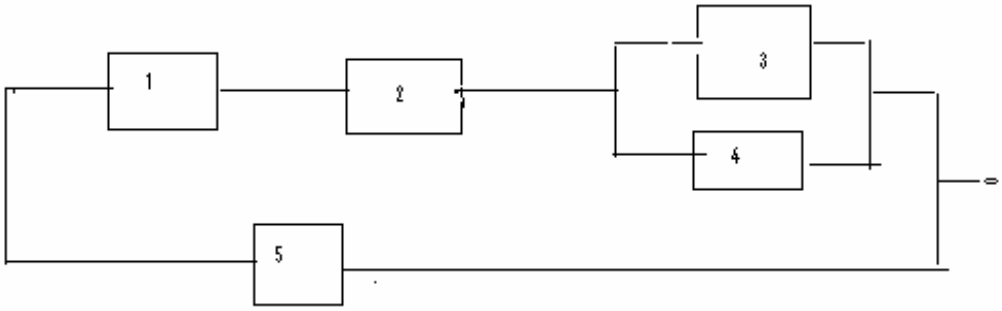
2. a) Explain in detail various factors affecting the plant location.
b) List out the objectives of plant layout.

3. a) Differentiate between outline process chart and flow process chart.
b) Develop a man-machine chart with a suitable example.

4. a) Derive equation for a simple EOQ and state the assumptions you made.
b) Write short notes on value analysis.

5. a) Explain Ishikawa diagram by taking a suitable example.
b) Explain the importance of process capability in quality control.

6. a) Explain various steps involved for developing a Preventive Maintenance program.
b) Derive a general expression for the unreliability of the model shown below and hence evaluate the unreliability of the system if all the components have a reliability of 0.8.



7. a) Explain the functions of an entrepreneur.
b) Explain about professional code of conduct.

8. a) Explain various methods of job evaluation.
b) Explain salient features of industrial disputes act.

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CODE No.:10BT50401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

ANALOG COMMUNICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define modulation. Explain the need for modulation.
b) With a neat sketch, explain envelope detector.

2. a) Explain DSBSC generation using ring modulator with neat waveforms.
b) Explain about the quadrature null effect of coherent detector.

3. a) Explain the detection of SSB signal using coherent detection.
b) Give the time domain and frequency domain representation of VSB and define an expression for transfer function of the VSB filter.

4. a) Explain the wide band FM using Bessel function analysis.
b) A base band signal (modulating signal) $X(t) = 5 \cos (2 \pi \times 15 \times 10^3 t)$ angle modulates a carrier signal of $A \cos (2 \pi \times 20 \times 10^6 t)$.
i) Determine the modulation index and bandwidth for FM and PM systems.
ii) Find the change in the bandwidth and modulation index for both FM and PM, if the modulating frequency f_m is reduced to 5 KHz.

5. Derive the expression for signal to noise ratio in FM system and DSB-SC system.

6. a) Explain the operation and function of each and every block of AM transmitter.
b) Explain the concept of frequency stabilization in FM transmitters.

7. a) Differentiate between simple, delayed and amplified AGC and explain their action with the help of simple circuit blocks.
b) Write in detail about the limiter used in FM receiver.

8. a) State and prove sampling theorem.
b) Explain about time division multiplexing

CODE No.:10BT50402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

ANTENNAS AND WAVE PROPAGATION

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is the difference between Directivity and Gain?
b) Derive FRISS transmission formula? Compute the power transmitted for a transmission distance of 2km at 8MHz. The effective areas of transmitting and receiving antennas are $20m^2$ and $15m^2$ respectively.

2. a) Obtain the expression for radiation resistance of LOOP antenna.
b) Consider a 100 KHz radio transmitter feeding a 100mt vertical antenna. Determine its effective height, R_r and efficiency if the loss resistance $R_L = 1.5\Omega$.

3. a) Derive the condition for directivity of end-fire array with increased directivity.
b) Four isotropic sources are placed at $\lambda/6$ mt apart. They have a phase difference of $\pi/4$ between adjacent elements. Find the beam width between first nulls.

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) Discuss different feed methods of parabolidal reflector in terms of F/D ratio, spill over and back-lobes.
b) Explain the operating principle of Microstrip antenna.

6. a) Explain the principle of operation of Lens antenna.
b) Explain the gain measurement method using three antennas.

7. a) Discuss the effects of earth's properties on ground wave properties.
b) Obtain the expression for the field strength at the receiving point for space wave propagation.

8. a) Explain the refraction and reflection of sky waves by Ionosphere.
b) Explain Skip distance and MUF. What are the relation between MUF and Skip distance?

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

LINEAR IC APPLICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the operation of a cascade differential amplifier.
b) Derive the voltage gain of a dual input unbalanced output differential amplifier.

2. a) Tabulate the characteristics of ideal and practical operational amplifiers. Draw the equivalent circuit of an operational amplifier.
b) What are the various DC and AC characteristics of an Op-Amp? Explain any one of them from each.

3. a) Analyze instrumentation amplifier circuit using op-amp and discuss its applications.
b) Draw and explain the operation of an AC inverting amplifier circuit. Present the design aspects.

4. a) Draw and explain the characteristics of ideal and practical comparators.
b) Draw and explain the operation of a triangular wave generator.

5. a) What do you mean by Sallen Key filter? Explain.
b) Design a third order Butterworth low pass filter having upper cutoff frequency of 1.5 KHz.

6. a) Explain how the Op-Amp as a Schimitt trigger with neat diagram.
b) Design a Schimitt trigger having upper and lower threshold of 120mV. Input to this circuit is 1V peak to peak triangular wave of 100Hz. Draw the hysteresis loop.

7. a) Explain the following applications of 565PLL.
i) Frequency multiplier ii) FSK
b) Draw and explain the operation of sample and hold circuit using Op-Amp.

8. a) Give the specifications of AD574.
b) Explain the operation of ADC.
i) Dual slope ADC ii) Flash type ADC

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

DIGITAL IC APPLICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Draw the CMOS circuit diagram of tri-state buffer. Explain the circuit with the help of logic diagram and function table.
b) Design a CMOS 4-input AND-OR-INVERT gate. Draw the logic diagram and function table.

2. a) List out bipolar families and compare them with reference to propagation delay, power dissipation, speed-power product and low level input current.
b) Explain in detail about CMOS/TTL interface.

3. a) Write a VHDL Entity and Architecture for the function. F(x) = a b c also draw the relevant logic diagram.
b) Explain the use of packages. Give the syntax and structure of a package in VHDL.

4. a) Explain structural design elements of VHDL.
b) Explain about time dimension and synthesis in VHDL.

5. a) Implement 4-bit ripple adder using 1-bit full adder and write VHDL code for this implementation.
b) Design the code conversion for 3-bit Gray code to Binary code and write VHDL code for this design.

6. a) Design a 24 - bit comparator using 74x682 ICs and write VHDL code for this.
b) Write the VHDL code for 4-bit barrel shifter.

7. a) Distinguish between latch and flip-flop. Show the logic diagram for both.
b) Design a Mod-12 ripple counter using 74x74. Write VHDL code for this using data flow style.

8. Explain in detail about:
(i) Standard SRAM
(ii) Synchronous SRAM.

CODE No.:10BT50421

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

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) Find the force on a charge of -100mC located at P (2, 0, 5) in free space due to another charge 300μC located at Q (1, 2, 3).
b) State and express Gauss's law in both integral and differential forms.

2. a) The region y < 0 contains a dielectric material for which $\in_{r1} < 0$. The region y > 0, $\in_{r2} = 4$. If $E_1 = -3.0a_x + 5.0a_y + 7.0a_z \frac{v}{m}$, find electric field and electric flux density in medium 2.
b) Derive Poissons and Laplace equations.

3. a) Determine the self inductance of a co-axial cable of inner radius 'a' and outer radius 'b' when a current 'I' flows through the cable.
b) A very long solenoid with 2 x 2cm cross section has an iron core ($\mu_r = 1000$) and 4000 turns/meter. If it carries a current of 500 mA, find its self inductance per meter, the energy stored per meter in its field.

4. a) Explain Faradays law for time varying fields.
b) In a free space **E = 20 cos (ωt - 50 x) a_y V/m**. Calculate:
i) Jd ii) H.

5. a) Derive wave equations for source free regions.
b) Explain the terms linear polarization, circular polarization and elliptical polarization.

6. a) Derive suitable expression for transmission coefficient when a plane wave incident at some angle at the interface of two media. Consider parallel polarization only.
b) A uniform plane wave is incident from air onto glass at an angle from the normal of 30^o. Determine the fraction of the incident power that is reflected and transmitted for parallel polarization. Assume glass has refractive index $n_2 = 1.45$.

7. a) Differentiate Electromagnetic Interference, Electromagnetic Compatibility and Electromagnetic Susceptibility.
b) Explain different sources of Electromagnetic Interference.

8. Write short notes on:
i) Grounding.
ii) Cable shielding.

CODE No.:10BT50422

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

LINEAR AND DIGITAL IC APPLICATIONS

[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) Explain the functions of all building blocks of an operational amplifier.
b) Define slew rate and describe a method to improve slew rate.

2. a) Draw the circuit diagram of an integrator circuit and explain its functioning with the input- output wave forms. Derive the output voltage V_0 of an integrator circuit.
b) Explain with a neat circuit diagram, the working of voltage to current converter with floating load.

3. a) Give the function block diagram of NE 565 PLL and make circuit connections to track the input signal and explain its working principle.
b) How is an Astable multivibrator using 555 timer connected into a pulse position modulator. Explain with a circuit diagram.

4. a) Write a short note on CMOS logic with example.
b) Draw the circuit of CMOS NOR gate and verify the Boolean function.

5. a) Draw the circuit schematic of a TTL NAND gate. Why TOTEM POLE output stage is necessary. Explain its operation with the help of its transfer curve.
b) Compare TTL gate with ECL and MOS logic families.

6. a) Write a VHDL entity and architecture for the function $F(x) = (a + b)\ (c \oplus d)$ also draw the relevant logic diagram.
b) Explain the various data types supported by VHDL. Give the necessary examples.

7. a) Explain the terms Multiplexing and Demultiplexing. Implement full adder circuit using Multiplexer.
b) What is an ALU? Explain the functions performed by the 74X181, 4-bit ALU.

8. a) Draw Master/Slave J-K flip-flop using S-R latches and explain its internal and functional behavior.
b) What are shift register counters? List two widely used shift register counters.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

PRINCIPLES OF COMMUNICATIONS

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Find the convolution of two signals $\mathbf{x(t) = e^{-2t}u(t)}$ and **h(t) = u(t).**
b) Find the Fourier Transform of
i) cos $\omega_o t$. ii) Gate function.

2. a) Explain DSB-SC generation using ring modulator.
b) Explain AM demodulation using Envelope detector.

3. a) Explain the principle of pre-emphasis and de-emphasis in FM with circuits.
b) Discuss the basic principle used in the detection of FM signals. Explain the operation of a phase discriminator circuit as an FM (Frequency Modulation) demodulator.

4. a) What is sampling? Derive sampling theorem for band limited signals.
b) What is multiplexing and explain Time Division Multiplexing?

5. a) Explain the need for prediction filter in ADPCM.
b) Explain about the uniform quantization and non-uniform quantization.

6. a) Draw the modulation waveforms for transmitting binary information [1 0 1 1 0] over baseband channels using sinusoidal carrier for the following modulation schemes.
i) PSK ii) DPSK
b) Explain generation and coherent detection of FSK with necessary mathematical analysis and block diagram.

7. a) Define information, entropy, channel capacity and data rate.
b) Establish the two shannon's theorems associated with channel capacity. What is Shannon's limit?

8. a) (7, 4) block code is generated by using a generator matrix G

$$G = \begin{matrix} 1 & 0 & 0 & 0 & : & 1 & 1 & 1 \\ 0 & 1 & 0 & 0 & : & 1 & 1 & 0 \\ 0 & 0 & 1 & 0 & : & 1 & 0 & 1 \\ 0 & 0 & 0 & 1 & : & 0 & 1 & 1 \end{matrix}$$

Find the following:
i) Parity check matrix.
ii) Code vectors for a message block (1001) and (1110).
iii) Show how a single error can be corrected.

b) Define minimum distance of a code word and weight of the code words.

CODE No.:10BT50501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

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. Explain the following:
i) Asymptotic notation
ii) Omega notation
iii) Theta notation

2. a) Explain disjoint set operations with example.
b) Explain the algorithm based on DFS for finding strongly connected components of a directed graph G.

3. a) Give a recursive and non recursive algorithm for binary search. Also find its time complexity.
b) Show how quick sort algorithm sorts the following sequence of keys in ascending order 33, 66, 11, 55, 67, 78, 24, 35, 88, 99.

4. a) Explain the following terms:
i) Feasible solution ii) Optimal solution iii) Objective function
b) Write procedure for Greedy Knapsack (P, W, M, X, N) where P and W contains profits and weights, M is Knapsack size and X is the solution vector.

5. Explain briefly about Dynamic programming.

6. State sum of subset problem. How to solve this problem using backtracking, explain with a suitable example.

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 Strategy to prove that a problem is NP hard.
b) What is meant by halting problem? Explain with a suitable example.

CODE No.:10BT50502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

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. Explain the functions of the following signals of 8086.
i) ALE 3M ii) LOCK 3M iii) HLDA 4M iv) NMI 4M

2. a) Write an ALP to arrange five 8 bit numbers in ascending order.
b) Using a do-while construct, develop a sequence of 8086 instructions that reads a character string from the keyboard and after pressing the enter key the character string is to be displayed again.

3. a) What is the function of *ready* pin in 8086? Draw the circuit diagram for wait state generation between 0 and 7 wait states and draw the corresponding timing diagram.
b) What do you mean by direct memory transfer? Explain 8257 DMA controller with block diagram.

4. a) Write the features of mode 0 in 8255? Specify handshaking signals and their functions if port A of 8255 is set-up as input port in mode 1.
b) Write an ALP in 8086 to generate a symmetrical square waveform with 1KHz frequency. Give the necessary circuit setup with a DAC.

5. a) Write briefly about DOS and BIOS interrupts and give the necessary examples.
b) With the help of a block diagram, explain the function of 8259.

6. a) Distinguish between synchronous and asynchronous data formats.
b) Write the instruction sequence for receiving 50 characters using 8251 and store them in memory location starting at 2080H.

7. a) Write briefly about the basic features of RISC processors.
b) Explain the use of the following registers of 80386.
i) Segment descriptor register. ii) Control register.
iii) Debug and test register. iv) System address register.

8. a) How does 8051 differentiate the external and internal program memory?
b) What is RALU? Draw and explain its internal block diagram.

CODE No.:10BT50503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

DATABASE MANAGEMENT SYSTEMS

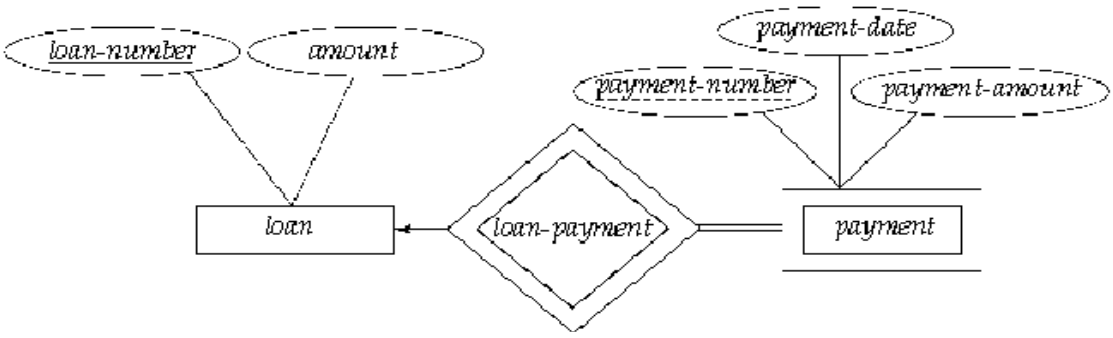
[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

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) List the entity sets and their primary keys of the following diagram.



b) Explain the aggregation.

3. a) What is an unsafe query? Give an example and explain why it is important to disallow such queries.
b) What is relational completeness? If a query language is relationally complete, can you write any desired query in that language?

4. a) Explain any 3 set operators 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)
i) Find names of suppliers who supply at least one part.
ii) Find names of suppliers who supply more than three parts.
iii) Find the total number of suppliers.
iv) Find the number of suppliers who supply at least one part.

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) Define serializable schedule. Explain with an example.
b) Discuss the RW,WR and WW conflict.

7. a) Explain optimistic concurrency protocol.
b) Explain log based recovery.

8. a) Why is a B+ tree a better structure than a B- tree for implementation of an indexed sequential file? Explain this with an example.
b) Explain indexed sequential access method.

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CODE No.:10BT50504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

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 essential properties of the following Operating Systems.
i) Batch Processing. ii) Multiprogramming. iii) Time Sharing.
iv) Real Time. v) Distributed.
b) What do you mean by spooling? How it is different from buffering?

2. Explain the following:
i) Context switch.
ii) Dispatcher.
iii) Various multi-thread models.

3. a) What is the role of critical regions in process synchronization?
b) Explain the solution of Dining-philosopher problem by using monitors.

4. Define deadlock avoidance. Discuss the Banker's Algorithm for deadlock-avoidance. (specify both Safety algorithm and Resource-Request Algorithm)

5. Given memory partitions of 100KB, 500KB, 200KB, 300KB and 600KB in order, how would each of the first-fit, best-fit and worst-fit algorithms place processes of 212KB, 417KB, 112KB and 426 KB in order. Which algorithm makes the most efficient use of memory?

6. Compare the allocation space for files on secondary storage to real storage allocation under variable partition programming.

7. a) What are the various disk-scheduling algorithms?
b) Explain the various disk scheduling techniques with examples.

8. Explain Access control and Revocation of Access rights.

CODE No.:10BT51001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

PROCESS CONTROL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define input and output variables with respect to a stirred tank heater.
b) Derive the transfer function of a mercury thermo-meter.

2. a) What is integral wind up? Explain.
b) Can derivative controller be used alone? Justify.

3. a) Explain the principle of operation of hydraulic PI controller.
b) Explain the operation electronic PD controller.

4. a) The process reaction curve of a temperature control system gave the values K = 10 , τ = 2 min and t_d = 0.1 min. Compute the settings of a P,PI and PID controllers using Cohen-Coon tuning methodology.
b) What are the relative advantages and disadvantages of the three time integral criteria ISE, IAE and ITAE? How would you select the most appropriate for a particular application?

5. a) Draw a neat figure of hydraulic actuator with a positioner and explain. List its advantages.
b) Differentiate pneumatic, electric and hydraulic actuators.

6. a) Explain in detail about cavitations.
b) List different types of valves and elaborate on butterfly valves.

7. a) Identify the control scheme which involves only one measurement and more than one manipulated variable and give an example.
b) What is meant by selective control systems? How many different types of selective control systems are available? Discuss the characteristics of any one type.

8. Explain feed forward control for the following
i) Heat exchangers
ii) Drum boiler

CODE No.:10BT51002

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

INDUSTRIAL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the measurement of Plainness, Angle and Roughness.
b) Explain any one optical methods of measuring length and distance measurement.

2. a) Explain the principle of velocity measurement by electrical differentiation of displacement voltages.
b) Write short notes on strain gauge based torque measurement.

3. a) Explain the different types of Manometers for pressure measurements.
b) Explain the principle and operation of Knudsen and Thermal conductivity gauge.

4. a) Write short notes on Ultrasonic type Flow Meters.
b) Discuss about Area type Flow Meters.

5. a) Describe the working of Buoyancy method for measurement of Density with a neat diagram.
b) List some devices for measuring Viscosity in laboratory and explain any one of them.

6. a) Explain Radiation Pyrometers with necessary diagrams.
b) Describe the measurement of temperature using Thermistors.

7. a) Write short notes on float type level gauges.
b) Describe the capacitance type level gauging.

8. a) Discuss in detail about servo type accelerometer.
b) Explain how the humidity measurement is carried out with a suitable example.

CODE No.:10BT51201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

SOFTWARE ENGINEERING

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is agility? What is agility process? List out the principles of agility.
b) If software does not wear out, why does it deteriorate?

2. a) Draw spiral model and explain each and every region of software development.
b) Is it possible to combine process models? If so justify with an example.

3. While studying a requirements document, you discover a significant requirement conflict that you know would be expensive to correct after the system has been implemented. You point this out to the system customer who rejects your arguments after what you think is a superficial analysis. You are confident that your technical decision is correct. Discuss what you should do in such a situation**.**

4. a) Discuss about basic issues in design.
b) What is the purpose of domain analysis? How is it related to the concept of requirements pattern?

5. a) Explain interface design evaluation cycle.
b) Explain user interface design process.

6. What diagram type(s) can be used to describe the following:

- Behaviour of an object.
- Interaction between different objects.
- Life-cycle dependencies of objects.
- Generalization of domain-specific concepts (documents, persons, ...).
- Specialization of user roles and their interactions with a system.
- One specific case of behaviour of objects.
- Many cases of dynamic interaction between objects in one diagram.
- Location of software components on the hardware.
- Organization of a large amount of classes.
- 1-to-many relationships between classes.
- Behaviour over time.

7. a) Discuss Metrics for Software quality.
b) Explain Mitigation, Monitoring and Management.

8. a) What is the process of performing the Software Reviews? Draw a flow diagram about the work flow in software reviews.
b) Explain the quality concepts with appropriate examples.

CODE No.:10BT51501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

SYSTEM SOFTWARE

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define System Software. Give some examples of System Software.
b) Write the different types of statements that involved in building the assembler program.
c) Point out the differences between system software and application software's.
d) State a reason why assembly language and machine languages are called as Low level languages and Discuss in details about merits and demerits of assembly level language.

2. a) What is meant by conditional jump instruction? Explain with an example.
b) List bit Shift and Rotate instructions. Explain.

3. a) Explain various string operations and arithmetic operations in details.
b) Discuss in detail about advanced screen and keyboard processing functions.

4. a) Explain the Macro Processor and its function. Write any two feature design issues.
b) Describe the segmentation concepts with example.

5. Draw the flowchart or state the algorithm of PASS-I of the assembler and explain it.

6. a) Write about different data structures used in Pass-II of an assembler.
b) Compare and contrast single pass assembler and two pass assembler.

7. Explain the following in detail:
i) Linkage Editor.
ii) Dynamic Linking.
iii) Bootstrap Loaders.

8. a) Discuss in detail the editing process of text editors.
b) Discuss issues involved in the design of user interface for text editor.

CODE No.:10BT60501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

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) Design DFA which accepts string 1100 only.
b) Design a DFA which accepts set of all strings contains 1100 as substring, where $\sum$ = **{0, 1}**.

2. a) Construct a mealy machine can output EVEN, ODD according as the total number of 1's encountered is even or odd. The input symbols are 0 and 1.
b) Write the applications of the finite automata with output.

3. a) Construct NFA for the given Regular Expression $(11 + 0)^* (00 + 1)^*$.
b) Check whether the following languages are regular or not
i) $L = \{a^{2n} | n > 0\}$ ii) $L = \{0^{n^2} | n \geq 1\}$

4. a) Construct NFA for the following grammar
S → Ab/ab
A→ Ab/Bb
B → Ba/a
b) State whether L = { $a^n b^n$ | n > 0 } is regular.

5. a) Write the procedure for converting from a CFG to CNF.
b) Write the pumping lemma for CFL.

6. a) State and explain the closure properties of Context Free Languages.
b) Convert the following CFG to Greibach Normal form.
S → AA
A → AAA
A → a
A → bA
A → Ab

7. Design a Turing Machine for the following that accepts:
i) L = {$0^n 1^n$} ii) L = {$0^n 1^n 0^n$}

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.:10BT61202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

COMPUTER NETWORKS

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the differences between a computer network and a distributed system?
b) What are the applications of computer networks?
c) How the Internet has evolved over the years.

2. Explain about mobile telephone system.

3. a) Describe design issues of Data link Layer.
b) Define CRC with example.

4. a) Derive the efficiency of Pure ALOHA and Slotted ALOHA.
b) Explain the working of basic bitmap protocol.

5. Explain Congestion Control Algorithm and Distance Vector Algorithm.

6. a) Explain UDP Segment Header with a header format.
b) Explain Timer Management in TCP.

7. How Domain Naming System works?

8. a) What is the need for Bluetooth?
b) Explain transposition cipher with the help of example.

CODE No.:10BT4EC01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

OPTIMIZATION TECHNIQUES

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain the following terms
i) Design constraints ii) constraint surface iii) objective function

2. Find all local maximum, local minimum and saddle points for
i) $f(x_1, x_2) = x_1^3 - 3x_1x_2^2 + x_2^4$
ii) $f(x_1, x_2) = x_1^2x_2 + x_2^3x_1 - x_1x_2$

3. Solve the following LPP by Big-M method
Minimize $Z = 4x_1 + 3x_2$
Subject to constraints: $2x_1 + x_2 \geq 10$; $-3x_1 + 2x_2 \geq 6$; $x_1 + x_2 \geq 6$; $x_1, x_2 \geq 0$.

4. Explain Vogel's approximation method and apply it in obtaining Initial Basic Feasible Solution to the following transportation problem

	D	E	F	G	Supply
A	11	13	17	14	250
B	16	18	14	10	300
C	21	24	13	10	400
Demand	200	225	275	250	

5. Find the value of x in the interval (0,1) which maximizes the function f(x) = x(1.5-x) within ± 0.05 using Fibonacci method.

6. Solve the following equations using the steepest descent method (two iterations only) the starting point, $X_1 = \{0\ 0\ 0\}$:
$2X_1+X_2 = 4$, $X_1+2X_2+X_3 = 8$, $X_2+3X_3=11$

7. Using Exterior penalty function method to solve
Minimize: $f(X) = x_1^2 + 2x_2^2$
Subject to constrain $2x_1 + 5x_2 = 10$

8. Determine the values of u_1, u_2, and u_3 using dynamic programming so as to ,
Maximize $u_1u_2\,u_3$
Subject to $u_1+u_2+u_3=10$
and $u_1, u_2, u_3 \geq 0$

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CODE No.:10BT4HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

MANAGERIAL ECONOMICS AND PRINCIPLES OF ACCOUNTANCY

[Electrical and Electronics 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. What is demand forecasting and briefly discuss different methods of demand forecasting?

2. Explain the explicit ***Vs*** implicit costs with suitable examples.

3. Distinguish between market price and normal price. Discuss the significance of time element in determination of price under perfect competition**.**

4. What are the objectives behind the emergence of company organization? Do they achieve these objectives? Justify your answer.

5. Define 'Accounting'. Explain its concepts and conventions.

6. Prepare Trading, Profit and Loss Account of M/s Nath & Nath Limited, Tirupati for the year ended 31st December 2012 and a Balance sheet as on that date from the following Trial balance:

Particulars	**Debit Rs.**	**Credit Rs.**
Share Capital		2, 50,000
Debtors & Creditors	40,000	45,000
Bills payable		15,000
Purchases & Sales	1, 25,000	7, 50,000
Stock on 1-1-12	50,000	
Wages	48,000	
Coal	5,000	
Salaries	35,000	
Rent rates	2,000	
Stationary	500	
Travelers Commission	4,000	
Transport	1,000	
Advertisement	3,000	
Depreciation	76,500	
Plant machinery	3, 50,000	
Furniture	1, 00,000	
Investments	1, 75,000	
Cash in hand	20,000	
Cash at bank	25,000	
Total	**10, 60,000**	**10, 60,000**

Note: Closing Stock on 31.12.2012 is Rs.1,25,000

7. List out and explain different types of capital budgeting techniques and also explain their advantages in taking financial decisions of a firm.

8. Explain various fundamentals of Tally in application of accounting cycle.

CODE No.:10BT50422

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

LINEAR AND DIGITAL IC APPLICATIONS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define following parameters as applied to an Op-amp.
i) C.M.R.R ii) P.S.R.R
b) Draw the block schematic of an Op-amp and briefly explain each block.

2. a) Draw and explain the ideal differentiator circuit using an Op-amp. Mention its drawbacks and how these can be overcome.
b) Design a differentiator to differentiate an input signal that varies in frequency from 10 HZ to about 1 KHZ. If sine wave of 1 V peak at 1000 HZ is applied to this differentiator, draw the output waveforms.
c) Explain the difference between integrator and differentiator and give one application of each.

3. a) Design and draw the circuit and explain the operation of a 555 Timer IC in astable mode to get output wave form with 50**%** duty cycle.
b) Explain PLL with a block schematic and enlighten the terms:
i) free-running frequency f_0 ii) lock range
iii) capture range iv) pull-in time

4. a) Explain the effect of floating inputs on CMOS gate.
b) What is the difference between transmission time and propagation delay? Explain these two parameters with reference to CMOS logic.

5. a) Draw the circuit diagram and explain the working of TTL inverter with tristate output.
b) Draw the circuit of ECL logic OR/NOR gate and explain its function.

6. a) With examples explain the VHDL design flow and program structure.
b) What are the functions and procedures of VHDL?

7. a) Design a 4x4 combinational multiplier and write the corresponding VHDL program.
b) Explain the binary to gray code and BCD to excess-3 code conversion.

8. a) Write a VHDL program for a 74x163 like 4 bit binary counter.
b) Define clock skew explain how clock skew leads to incorrect outputs in synchronous circuit. Design one logic circuit that minimizes clock skew.

CODE No.:10BT50423

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

PRINCIPLES OF COMMUNICATIONS

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) With a neat block diagram, explain an Electrical Communication System.
b) Explain the properties of the Fourier transform.

2. a) Explain the square-law diode modulation method for AM generation.
b) An SSB transmission contains 10 kW. This transmission is to be replaced by a standard modulated signal with the same power content. Determine the power content of the carrier and each of the sidebands when the percent modulation is 80%.

3. a) Draw the block diagram to generate NBFM wave and explain.
b) What is pre-emphasis and de-emphasis? Explain.

4. a) What are the advantages of Discrete modulation?
b) Explain the methods of generation of PAM.

5. a) With the help of neat diagrams, explain the transmitter and receiver of pulse code modulation.
b) Compare PCM, DM, ADM and DPCM.

6. a) Give the comparison of various digital modulation schemes in terms of bandwidth, power requirements and equipment complexity.
b) Binary data is transmitted at a rate of 10^6 bits/sec over a channel having a bandwidth of 3MHz. Assume that the noise power spectral density ($N_0/2$) at the receiver input is 10^{-10} W/Hz. Find the average carrier power required at the receiver input for coherent PSK scheme to maintain the probability of error is less than or equal to 10^{-4}. Assume that the argument of the Q function to achieve this probability of error is 3.75.

7. a) What is Entropy? Explain.
b) Develop Shannon-Fano code for five messages given by probabilities 1/2, 1/4, 1/8, 1/16, 1/16. Calculate the average number of bits/message.

8. Write the following:
a) Error detection methods
b) Block codes.

CODE No.:10BT50501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

DESIGN AND ANALYSIS OF ALGORITHMS

[Information Technology]

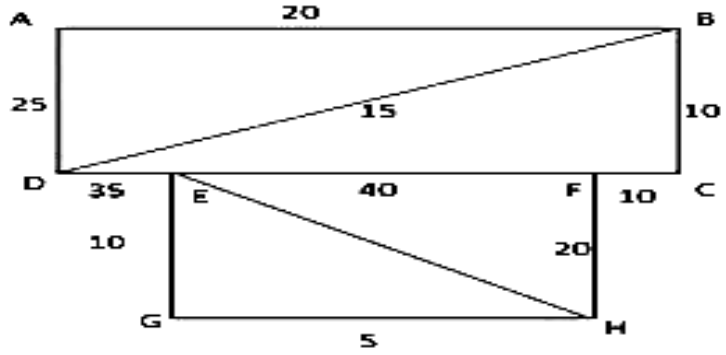
Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Explain Strassen's Matrix multiplication problem with the help of an example.
   b) Distinguish between DFS and BFS.

2. a) Write the pseudo-code of BFS and explain with the help of a graph.
   b) Write about Optimal Storage on Tapes.

3. a) Explain in detail NP-Hard problems with examples.
   b) Apply Traveling Salesman Problem to the graph given below.



4. a) What is Greedy Method? Explain with an example.
   b) Distinguish between Divide and Conquer and Backtracking approaches.

5. a) Write the program to solve the n-queen's problem. Also give an example simulation.
   b) Distinguish between NP-Complete and NP-Hard problems.

6. a) How does backtracking work on the 8 Queens problem with suitable example?
   b) Explain elaborately recursive backtracking algorithm.

7. a) Discuss the Control abstraction for LC-Search.
   b) Write a complete LC branch-and-bound algorithm for the 0/1 Knapsack problem.

8. a) Write and explain Non-deterministic satisfiability algorithm.
   b) Give an overview of NP-hard Scheduling problems.

CODE No.:10BT51202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

COMPUTER GRAPHICS

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) With a suitable diagram, explain about video display devices.
b) Write short notes on input devices.

2. a) What is DDA? Digitize the line with endpoints (20, 10) and (30, 18) by using Bresenham's line drawing algorithm.
b) Write a description of the Midpoint circle algorithm in which decision parameter P is updated using $\mathbf{x_{i+1}}$ & $\mathbf{y_{i+1}}$ instead of $\mathbf{x_i}$ & $\mathbf{y_i}$.

3. a) Write a note on Window-to-Viewport Transformation.
b) Determine sequence of basic transformations that are equivalent to the rotation of a point (x, y) around (1, 3).

4. a) Explain in detail the Cohen-Sutherland line clipping algorithm with an example.
b) What are spline curves?

5. a) What is Polygon? Explain different type of polygons. Explain the various approaches used to represent polygon.
b) Explain the procedure for generation of various surfaces and curves using B-Spline method.

6. a) Write the Transformation Matrix to rotate a point (x, y, z) about z-axis through an angle **θ** in clock wise direction.
b) Discuss about combined 3D Transformations.

7. a) Explain the Binary space partition tree visible surface algorithm and write a pseudo code for building a BSP tree.
b) Give the advantages and limitations of various visible surface detection methods.

8. a) Explain the methods of controlling animations.
b) Describe the linear list notations of animation languages.

CODE No.:10BT60102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

STEEL STRUCTURES - I

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Write a detailed note on partial safety factors and their significance in limit state design.
b) Explain briefly the properties of steel and how does the carbon content influence the properties of steel.

2. a) Explain with neat sketches failures in bolted connections.
b) A double cover butt joint is made using cover plates of 12 mm thick. The original plate is 20 mm thick and is made of Fe 410. The whole system is connected by bolts of 20 mm diameter of grade 4.6. Find the maximum strength and efficiency of the joint.

3. Design a fillet weld to join a tension member consisting of 2 ISA 100 mm **x** 75 mm **x** 8 mm. The angles are connected to either side of 12 mm gusset plate. The factored tensile load is 420 kN.

4. A tie member consists of two angles of ISA 75 mm **x** 75 mm **x** 6 mm connected on either side of a 10 mm thick gusset plate using a single row of bolts. Determine the tensile capacity of the member and the number of bolts required to develop full capacity of the member.
Adopt 20 mm diameter bolts; pitch = 60 mm and edge distance = 35 mm. The members are tack bolted. What is the effect on tensile strength if the members are not tack bolted and connected on the same side of gusset plate?

5. Design a simply supported beam of 5 m span. The beam is subjected to two concentrated loads of magnitude P acting at a distance of 1 m from either support and a central concentrated load of magnitude P. A udl of 3 kN/m is acting on the entire span. The value of P = 30kN for the dead load and 15 kN as imposed load. The beam ends are restrained against torsion with compression flange free to rotate in plan. The compression flange is unrestrained between the supports.

6. a) Briefly explain about the classification of compression members.
b) What are the maximum values of slenderness ratio?
c) Design a compression member using double channel section back to back to carry a factored load of 1700 kN. Length of the column is 5 m with one end fixed and other end hinged.

7. Design a laced column of length 9**.**0 m with two channels face-to-face to carry an axial load of 950 kN. The column is restrained in position but not in direction at both ends.

8. Design a slab base for a column section ISHB 350 @ 618**.**03 N/m made with Fe 410 grade is subjected to a factored axial compressive load 1200 kN. The base rests on concrete pedestal of grade M20.

CODE No.:10BT60103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

WATER RESOURCES ENGINEERING

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the factors affecting the choice of the method of irrigation.
b) What are the benefits that can be accrued from Irrigation projects?

2. a) What are the factors affecting duty? How can duty be improved?
b) A water course has a culturable commanded area of 1000 hectares. The intensity of irrigation for crop A is 40% and for crop B is 45%, both the crops being rabi crops. Crop A has a kor depth of 150 mm and kor period 3 weeks; and crop B has a kor depth of 100 mm and kor period 2 weeks. Calculate the discharge of the water course.

3. a) Explain with help of a diagram, the various component parts of a diversion headwork.
b) Discuss briefly the causes of failure of weirs on permeable foundation and their remedies.

4. a) Discuss the geological and tropological features which affect the selection of the type of the dam.
b) Discuss in brief the merits and demerits of various types of dam.

5. a) State the design criteria of a concrete gravity dam and explain briefly how you will determine the various factors of safety against possible failures.
b) Discuss the evolution of the final profile of a gravity dam from its elementary triangular profile and explain the main principles of its design.

6. a) Discuss the procedure for checking the stability of u/s slope under sudden-drawdown condition.
b) What is a phreatic line? What is its use? How would you locate the phreatic line in an earth dam with a horizontal drainage filter? What is entry correction?

7. a) What is a fall in a canal? How do you select its location?
b) What are the different types of outlets?

8. a) Describe with the help of sketches, various types of cross drainage works.
b) List out various factors affecting the selection of site for a cross drainage works.

CODE No.:10BT60104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

ENVIRONMENTAL ENGINEERING - I

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the objectives of a water supply system?
b) Explain the important component of a water supply system along with a flow diagram.

2. a) Enumerate various sources of water and discuss and compare the quality and quantity of the sources.
b) Explain the different factors that affect the water demand of domestic use.

3. a) What is "River Intake"? What are the factors which govern the location of an intake Z structure on a meandering river?
b) Mention the various appurtenances in the distribution system and state their functions.

4. a) Define water pollution. What are the sources of water pollution in both urban and rural environment?
b) What is turbidity? Describe the methods of measuring turbidity of a water sample in the laboratory.

5. a) What do you mean by coagulation? Explain the phenomena of coagulation.
b) Differentiate between temporary and permanent hardness. Explain two methods used in industry to remove permanent hardness.

6. a) What is filtration? Differentiate between slow and rapid sand gravity filters.
b) Enumerate the disinfectants used in water treatment? Discuss the affect of the presence of ammonia in water on chlorination process.

7. a) What do you mean by desalination? Explain various methods of desalination.
b) Write about treatment methods for removal of ;
i) Fluorides ii) Iron and Manganese.

8. a) Discuss the water storage requirement of a house of a residential building and how it is accomplished.
b) Write short note on detection and prevention of water leakage.

CODE No.:10BT60105

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

TRANSPORTATION ENGINEERING

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is the classification of highways adopted in different road development plans? Discuss.
b) What are the Engineering Surveys required to be carried out to prepare road development plans in an area and what kind of data is to be collected? Discuss.

2. a) Derive an expression for finding length of transition curve on horizontal alignment of highways.
b) Calculate the length of transition curve and the shift using the following data.
Design speed = 65 kmph; Radius of circular curve = 220 m; Allowable rate of introduction of super elevation (pavement rotated about the centre line) = 1 in 150; Pavement width including extra widening = 7.5 m.

3. a) What are the desirable properties of road aggregates? Explain.
b) Clearly explain the procedure of Penetration test on bitumen.

4. a) Differentiate between Flexible and Rigid Pavements.
b) Explain the Group Index Method of Flexible Pavement Design. What are the limitations of this method?

5. a) How the seepage flow and capillary rise can be controlled in sub surface drainage? Explain.
b) What are the problems related to road construction in water logged areas and what precautions are to be taken?

6. a) Give a neat sketch of a typical cross section of a permanent way of a BG track on an embankment and indicate the components.
b) Explain the remedial measures that can be taken to prevent creep.

7. a) Discuss about the types of gradients adopted in geometric design of a railway track.
b) In a layout of a BG yard, a 6° curve branches off from a 3° main curve in opposite direction. If the speed is restricted to 22 kmph on branch line and permissible value of cant deficiency is 7.61 cm, determine the speed restriction on main line.

8. Explain how the basic runway length is determined on the basis of the performance characteristics of jet and conventional engine aircrafts.

CODE No.:10BT60106

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

FOUNDATION ENGINEERING

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the following terms which are used in soil exploration.
   i) Area Ratio ii) Inside clearance
   iii) Undisturbed sample iv) Non-representation sample
   b) Briefly describe the Geophysical methods of soil exploration.

2. a) Give a critical comparison of the Coulomb and Rankine Earth pressure theories.
   b) A vertical wall 10 m high retains two horizontal layers of a saturated cohesive backfill with level surface. The top 4 m of the backfill has c = 18.2kPa, $\phi = 0$, $\gamma = 18.6$ kN/m^3. The bottom clay payer has c = 23.6 kPa, $\phi = 0$, $\gamma = 22.0$ kN/m^3. Compute the total active force if tension crack develops and also locate the application of the resultant lateral force.

3. A masonry retaining wall 1.0 m wide at the top and 3.0 m wide at the base and 4 m height has a vertical back face and retains soil, which exerts a total earth pressure of 40 kN/m and acts at a height of 1.5 m above the base. If the coefficient of friction between the base of the wall and the soil below is 0.5, compute the factor of safety against sliding and overturning failures.

4. a) What are the types of failures of finite slopes? Discuss in detail the conditions under which each type of failure is expected.
   b) A cutting is to be made in a clay for which c = 35 kPa and $\phi = 0°$. The density of the soil is 20 kN/m^3. Find the maximum depth for a cutting of side slope 1 ½ to 1, if the factor of safety is to be 1.5, let stability number = 0.17.

5. a) Discuss Meyerhof's bearing capacity theory. How does it differ from Terzaghi's theory?
   b) Compute the safe bearing capacity of a continuous footing 2.0 m wide and resting on a clayey sand at a depth of 1.5 m, if c = 16 kN/m^2, $\phi = 25^0$, $\gamma_{sat} = 19$ kN/m^3, $N_c = 25$, $N_q = 12.5$, $N_\gamma = 10$ and F.S.= 3.0.

6. a) With the help of neat sketch, describe the procedure for conducting a plate load test and explain how the safe load is determined from the test data. What are its limitations and uses?
   b) What is the settlement of a footing? How to estimate elastic settlement of a footing?

7. a) Discuss the classification of piles based on different criteria with the aid of neat sketches.
   b) A square group of 25 piles extends between depth of 2 m and 12 m in a deposit of 20 m thick stiff clay overlying clay. The piles are 0.5 m in diameter and are spaced at 1 m centre to centre in centre in the group. The undrained shear strength of the clay at the pile base level is 180 kPa and the average value of the undrained shear strength over the depth of the pile is 110 kPa. The adhesion coefficient is 0.45. Estimate the capacity of the pile group considering an overall factor of safety equal to 3 against shear failure.

8. a) What are the types of wells based on shape? What are the merits and demits of each shape for a well?.
   b) Explain the lateral stability of a well foundation by Terzaghi's Analysis.

CODE No.:10BT60201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

UTILIZATION OF ELECTRICAL ENERGY

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Derive an expression for the temperature rise of equipment in terms of the heating time constant?
b) A 6-pole, 50 Hz slip ring induction motor with a rotor resistance per phase of 0.2 Ω and standstill reactance of 1.0 Ω/phase runs at 960 r.p.m. at full load. Calculate the resistance to be inserted in the rotor circuit to reduce the speed to 800 r.p.m., if the torque remains unaltered.

2. a) Explain the following modes of heat transfer :
i) Conduction ii) Convection iii) Radiation.
b) List the properties of good heating elements.

3. a) Compare resistance and arc welding.
b) State the disadvantages of welding.

4. a) Define Horizontal portal curve and Vertical polar curve.
b) Describe inverse square law.

5. a) Enumerate various factors which have to be considered while designing any lighting scheme.
b) Discuss about M.B. type mercury vapour lamp.

6. State the system of track electrification generally employed for the following services and Justify your answer and mention the voltages adopted in each case.
i) Electric suburban railway service.
ii) Main line service
iii) Tram-way service in a busy town area.

7. A 250 tone motor coach having 4 motors each developing 6,000 N-m torque during acceleration, starts from rest. If the gradient is 40 in 1000, gear ration 4, gear transmission efficiency 87%, wheel radius 40cm, train resistance 50N/tonne, addition of rotational inertia 12%. Calculate the time taken to attain a speed of 50kmph. If the line voltage is 3,000V DC and efficiency of motors 85% find the current during notching period.

8. Write short notes on;
i) Energy, Power (Demand), Voltage, Current Power factor , Real Power, Reactive Power with respect to Electrical Energy and Power concepts.
ii) Electronic chokes.

CODE No.:10BT60202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

POWER SEMICONDUCTOR DRIVES

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Draw and explain Speed-torque characteristics of single phase full converter feeding a D.C Series motor.

2. a) Explain the Speed - torque characteristics of a separately excited D.C motor connected to a three phase semi controlled converter.
   b) A 220V, 600 r.p.m, 500A separately excited motor has armature and field resistances of 0.02 and 10 Ω respectively. Armature is fed from a three-phase fully-controlled rectifier and field from half-controlled single-phase rectifier. A three-phase ac source with a line voltage of 440 V is available. Armature rectifier is fed from a three-phase transformer with Y-Δ connection and field rectifier from a single-phase transformer. Calculate the turn's ratio of the transformer.

3. a) Explain the four quadrant operation of D.C motors by dual converters.
   b) Explain briefly the following methods of braking of a D.C Motor
   i) Regenerative braking. ii) Dynamic braking.

4. a) Distinguish between class A and class B choppers with suitable examples of speed control of motors.
   b) A 220V, 190A D.C series motor has armature and field resistances of 0.03 and 0.02 ohms respectively. Running on no load as a generator with field wining connected to a separate source it gave following magnetization characteristic at 500 r.p. m.

Field Current (A)	40	80	120	160	200
Terminal Voltage (V)	52	108	148	176	189

   Motor is controlled by a chopper in dynamic braking with a braking resistance of 2Ω.
   i) Calculate motor speed for a duty ratio of 0.6 and motor current of 160 A.
   ii) What will be the motor speed for a duty ratio of 0.75 and motor torque equal to half of rated torque?

5. a) With the help of block diagram and necessary characteristics, explain the variable frequency speed control of induction motor,
   b) Explain briefly voltage source inverter (uses transistors as switches) fed induction motor drive.

6. A 440 V, 50 Hz, 970 r.p.m, 6-pole, Y-connected, 3-phase wound rotor induction motor has the following parameters referred to the stator:
   $R_s = 0.1\Omega$, $R_r' = 0.08\ \Omega$, $X_s = 0.3\ \Omega$, $X_r' = 0.4\ \Omega$. The stator to rotor turns ratio is 2.
   Motor speed is controlled by Static Scherbius Drive. Drive is designed for a speed range of 25% below the synchronous speed. Maximum value of the firing angle is 165°. Calculate the following.
   i) Transformer turns ratio.
   ii) Torque for a speed of 780 r.p.m and $\alpha = 140°$.
   iii) Firing angle for half the rated motor torque and speed of 800 r.p.m.
   Assume DC link inductor has a resistance of 0.01 Ω

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) What are Stepping motors? Explain the drive circuits of the Stepping motor with a neat diagram.
   b) Explain the operation of Battery powered vehicles.

CODE No.:10BT60301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

OPERATIONS RESEARCH

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Use Simplex method to solve the following LP problem.
Maximise: **Z= 50x+60y** subject to the following constraints
2x+y ≤ 300
3x+4y ≤ 480
4x+7y ≤ 812 and x, y ≥ 0
b) Verify your answer with graphical method.

2. a) What is meant by Transshipment problem?
b) Five operators have to be assigned to five machines. The assignment costs are given in the following table. Operator A cannot operate machine III and operator C cannot operate machine IV. Find the optimal assignment.

		Machine				
		I	II	III	IV	V
Operator	A	5	5	-	2	6
	B	7	4	2	3	4
	C	9	3	5	-	3
	D	7	2	6	7	2
	E	6	5	7	9	1

3. For the following data, draw the network diagram and then crash the activities to find the time-cost trade-off points that the company should want to consider. Start with the plan that has the longest duration.

Activity	**Preceding Activity**	**Time (weeks)**		**Cost ($000s)**	
		Normal Program	**Crash Program**	**Normal Program**	**Crash Program**
A	-	2	2	5	5
B	A	5	3	11	21
C	A	2	1	7	16
D	B, C	4	2	8	22
E	B	3	2	9	18
F	D, E	3	3	9	9

4. a) Briefly explain the important characteristics of a Queuing System.
b) A supermarket has a single cashier during the peak hours. Customers arrive at a rate of 20 per hour. The average number of customers that can be processed by the cashier is 24 per hour. Calculate:
i) The probability that the cashier is idle.
ii) The average number of customers in the queuing system.
iii) The average time a customer spends in the system.
iv) The average number of customers in the queue.
v) The average time a customer spends in the queue waiting for service.

5. A distance network consists of 11 nodes which are distributed as shown in table. Find the shortest path from node 1 to node 11 and also the corresponding distances.

Arc	Distance	Arc	Distance
1-2	8	5-7	8
1-3	7	5-8	1
1-4	4	6-9	3
1-5	2	6-10	5
2-6	4	7-9	5
3-6	8	7-10	1
3-7	4	8-10	5
4-7	6	9-11	5
		10-11	5

6. a) State the objectives of Inventory control.

b) A contractor has to supply 10,000 bearings per day to an automobile manufacturer. He finds that when he starts a production run, he can produce 25,000 bearings per day. The cost of holding a bearing in stock for one year is 2 paise and the setup cost of a production run is Rs. 18. What is the optimum lot size and how frequently should production run be made?

7. a) What is selective inventory control and how it is different from other inventory models.

b) A manufacturer has to supply 10,000 bearings to an automobile manufacturer. He finds that when he starts a production run, he can produce 25,000 bearings per day. The cost of holding bearing in stock for one year is 20 paise and set-up cost is Rs 180 per setup. How frequently should the production run be made to minimize the setup cost and holding cost?

8. a) Explain the dominance properties.

b) Solve the following game by graphical method:

		Player B			
		I	II	III	IV
Player A	I	2	2	3	-2
	II	4	3	2	6

c) Solve the following game problem:

		Player B		
		B1	B2	B3
Player A	A1	-2	15	-2
	A2	-5	-6	-4
	A3	-5	20	-8

CODE No.:10BT60305

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

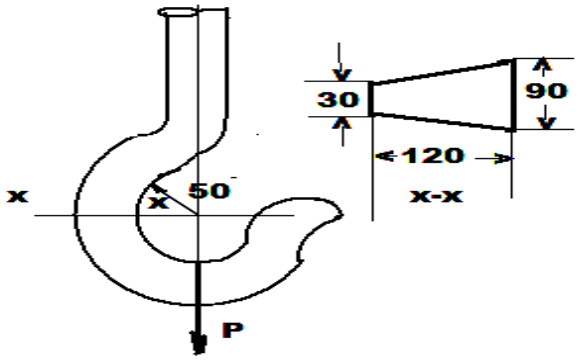
DESIGN OF MACHINE ELEMENTS-II

[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) How does the helix angle influence on the efficiency of square threaded screw?
b) Discuss the various types of power threads. Give atleast two practical applications for each type. Discuss their relative advantages and disadvantages.

3. Design a belt drive to transmit 110 kW for a system consisting of two pulleys of diameters 0.9 m and 1.2 m, centre distance of 3.6 m, a belt speed 20 m/s, coefficient of friction 0.3, a slip of 1.2 % at each pulley and 5% friction loss at each shaft, 20% over load.

4. a) Explain briefly the material properties of a sliding contact bearing.
b) What is the procedure followed in designing a journal bearing?

5. a) What are rolling contact bearings? Discuss their advantages over sliding contact bearings.
b) A shaft rotating at constant speed is subjected to variable load. The bearings supporting the shaft are subjected to stationary equivalent radial load of 3 kN for 10 percent of time, 2 kN for 20 percent of time, 1 kN for 30 percent 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 percent reliability, calculate dynamic load rating of the ball bearing.

6. The following particulars of a single reduction spur gear are given :
Gear ratio = 10 : 1;
Distance between centers = 660 mm approximately;
Pinion transmits 500 kW at 1800 r.p.m.;
Involute teeth of standard proportions (addendum = m) with pressure angle of 22.5°;
Permissible normal pressure between teeth = 175 N per mm of width.
Find : 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.

7. A helical spring *B* is placed inside the coils of a second helical spring *A*, having the same number of coils and free length. The springs are made of the same material. The composite spring is compressed by an axial load of 2300 N which is shared between them. The mean diameters of the spring *A* and *B* are 100 mm and 70 mm respectively and wire diameters are 13 mm and 8 mm respectively. Find the load taken and the maximum stress in each spring.

8. Explain the function of the following for I.C engine piston:

i) Ribs.
ii) Piston rings.
iii) Piston skirt.

CODE No.:10BT60401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

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) The impulse response of LTI system is **h(n)=(1, 2, 1, -1)**. Find the response of the system to the input **x(n) = (2, 1, 0, 2)**.

b) Find the convolution sum of **x(n) = 1, n = -2,0,1**
= 2, n = -1
= 0, elsewhere
and **h(n) = δ (n) - δ (n-1) + δ(n-2) - δ (n-3)**

2. a) How will obtain linear convolution from circular convolution?
b) Write differences between linear and circular convolution.

3. Given **x(n) = 2^n** and **N=8**, find **X(k)** using DIFFFT radix-2 algorithm.

4. a) Obtain the cascade form realizations of FIR systems **$H(z) = 1+5/2\ z^{-1}+ 2z^{-2} +2\ z^{-3}$**
b) What are the different types of structures of Realization of IIR Filters? Draw any two structures.

5. Design a digital butter worth filter that satisfies the following constraints using bilinear transformation. Assume T = 1s

$$\sqrt{0.5} \le \left|H(e^{j\omega})\right| \le 1 ;\ 0 \le \omega \le \frac{\pi}{2}$$

$$\left|H(e^{j\omega})\right| \le 0.2 ;\ \frac{3\pi}{4} \le \omega \le \pi$$

6. a) Name the different types of window functions. How are they defined?
b) The desired frequency response of a low pass filter is

$$H_d(e^{j\omega}) = \begin{cases} 1 \ for \ \frac{-\pi}{2} \le \omega \le \frac{\pi}{2} \\ 0 \ for \ \frac{\pi}{2} \le \omega \le \pi \end{cases}$$

Find the filter coefficients using rectangular window with M=3.

7. With neat diagram and supportive derivation, explain multirate signal processing using two techniques.

8. a) Give the areas in which signal processing finds its applications.
b) Explain the spectral estimation of non-stationary signals.

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CODE No.:10BT60402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

DIGITAL COMMUNICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Compare and contrast uniform and non-uniform quantization.
b) Explain anyone of the non-linear quantization standard.

2. a) Explain the features of Delta Modulation with neat block diagram.
b) Write about 'Slope overload distortion'.

3. a) Describe the QPSK modulation and demodulation system.
b) Explain the operation of a DEPSK system and distinguish it from a DPSK system.

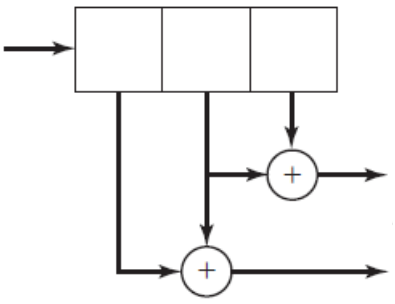
4. a) With suitable block diagram explain the principle and operation of DPCM scheme.
b) Derive an expression for probability of error for binary ASK signaling scheme. Compare coherent and non coherent error probabilities.

5. a) Derive an expression for entropy function to discrete memory less source.
b) Derive an expression for probability error for PSK scheme.

6. a) State and explain Shannon-Fano theorem.
b) Describe the steps in the Huffman encoding algorithm.

7. a) Describe the sequential decoding of convocational codes.
b) Generate standard array for (7, 4) Hamming code to decode the received sequence of (1, 1, 1, 0, 1, 0, 0).

8. a) Distinguish between convolutional codes and block codes.
b) Draw the state diagram and trellis diagram of the convolutional encoder shown below:



CODE No.:10BT60403

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

MICROWAVE ENGINEERING

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the applications of microwave frequencies?
b) Determine the cut-off wave length for the dominant mode rectangular wave guide of breadth a = 10 cm. For 2.5 GHz signal propagating in this wave guide in dominant mode, calculate the guide wave length, group and phase velocities.

2. a) Explain briefly about the losses in micro-strip lines.
b) Determine the power losses due to finite conductivity of guide walls in rectangular wave guides.

3. a) Describe in detail about waveguide discontinuities.
b) What are waveguide joints? Mention their advantages and disadvantages.

4. a) Show that a 3-port perfectly matched junction is a circulator. What are its applications?
b) Derive the S-matrix of a Directional Coupler.
c) Explain about Faraday rotation.

5. a) Derive an expression for velocity modulation equation for 2 cavity Klystron amplifier.
b) Show that maximum electron efficiency of a 2 cavity Klystron amplifier is about 58%

6. a) What are cross field devices? How bunching is achieved in a cavity magnetron?
b) Derive an expression for the Hull Cut off condition for cylindrical magnetron oscillator.

7. a) Draw the equivalent circuit of parametric amplifier and explain the amplification mechanism of parametric amplifier.
b) A Gunn diode is working in transit time mode at 12 GHz. The domain of charges move at 10^7 cm /sec speed. Calculate the length of the device and find out can the device work at 10 GHz and 14 GHz. Which is the mode of operation in each case?

8. a) What are the various blocks of a typical microwave bench? Explain their functionality.
b) Explain the measurement of frequency by;
i) Dip method.
ii) Slotted line method.

CODE No.:10BT60404

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

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. a) Discuss about the different types of interrupts in 8085 processor.
b) Write an 8085 assembly language program and algorithm for finding the largest number in an array of six 8-bit numbers.

2. a) Discuss about the Pin diagram of 8086 processor with diagram.
b) Describe the importance of memory segmentation related to 8086 processor.

3. What are the addressing modes available in 8086 microprocessor?

4. Explain how to convert an analog signal into digital signal.

5. a) Write down the features of 8251.
b) Discuss how 8251 is used for serial communication of data.
c) Explain the advantages of using the USART chips in microprocessor based systems.

6. a) Explain the major components of 8259 with suitable diagram.
b) Explain the functions of handshake signals.

7. State any 10 instructions from the instruction set of 8051 microcontroller.

8. What are the different modes available in the operation of a programmable timer?

CODE No.:10BT60405

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

VLSI DESIGN

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the different types of major processes used in IC fabrication? Present the classification of integrated circuits.
   b) With neat sketches, explain the CMOS p-well process.

2. a) Draw and explain the significance of various pull up forms.
   b) Draw and explain the characteristics of nMOS transistor and its body effect.

3. a) Explain about the stick notation. Draw the circuit for CMOS inverter and its stick diagram.
   b) Explain the need for design rules.

4. Describe three sources of wiring capacitances. Explain the effect of wiring capacitance on the performance of a VLSI circuit.

5. a) Explain the structured design approach of Booth Multiplier with neat sketch.
   b) Write notes on high density memory elements.

6. a) Explain the semiconductor integrated circuit design approach for complex programmable logic devices.
   b) Write notes on Field Programmable Gate Arrays.

7. a) What is simulation and explain the types of simulation.
   b) Discuss about design capture and design verification tools.

8. a) Explain about;
      i) Diagnostic test.
      ii) Functional Test.
      iii) Parametric Test.
   b) Discuss about system level test techniques.

CODE No.:10BT60501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

THEORY OF COMPUTATION

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is transition system? Discuss about the properties of transition functions.
b) Design a deterministic finite automata for the language that accepts set of all strings such that every block of five consecutive symbols contains at least two 0's over the alphabet {0, 1}.

2. a) Construct DFA's equivalent to the **NFA ({*p,q,r,s*}, {0,1}, δ, *p*,{*q,s*})** where **δ** is given below:

	0	1
p	*q, s*	*p*
q	*r*	*q, r*
r	*s*	*P*
s	-	*P*

b) Give Melay machine for input from $(0+1+2)^*$ print the residue modulo 5 of the input treated as a ternary (base 3, with digits 0, 1, and 2) number.

3. a) Write the regular expression for the language with set of all strings not containing 101 as substring over the alphabet {0, 1}.
b) Construct finite automata equivalent to the regular expression $01[((10)^*+111)^*+0]^*1$.

4. a) Give the context free grammar generating the set of all strings over alphabet **{*a.b*}** with exactly twice as many ***a***'s as ***b***'s.
b) Construct left linear and right linear grammars for the languages $(((01+10)^*11)^*)00)^*$.

5. a) Construct a DFA with reduced states equivalent to the regular expression **10 + (0 + 11)0* 1.**
b) Prove **(a + b)* = a*(ba*)***

6. a) Design PDA for the language $L = \{a^m b^n c^{m+n} / m, n \geq 1\}$
b) Construct PDA for the given grammar.
S → aA
A → aABC / bB / a
B → b
C → c

7. a) Explain about 2-way Turing machines
b) Explain about Church's Hypothesis.

8. Construct the LR(0) items for the given grammar
E → E +T /T
T → T *F/ F
F → (E) / a

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CODE No.:10BT60502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

UNIX PROGRAMMING

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the salient features of the UNIX Operating System.
b) Explain the architecture of the UNIX Operating System.

2. Explain the following commands in UNIX with a sample for each.
i) past ii) join iii) grep iv) egrep v) fgrep vi) tail vii) sort

3. a) What is shell programming? Explain with examples how expressions are evaluated in shell programming .
b) Explain the shell script used for debugging.

4. a) Explain **link, unlink, remove** and **rename** functions with syntaxes.
b) What are **fflush** and **fseek** functions? Explain.

5. a) What are interrupted system calls? With a sample program demonstrate a zombie.
b) What are unreliable signals? Briefly describe **exec** family system calls.

6. a) What is data management? Briefly describe the importance and usage of file locking.
b) What is a file? Compare and contrast locking files ***vs*** locking regions.

7. a) What is a semaphore? Explain.
b) Explain **shmat**, **shmget**, **shmdt** and **shmctl** commands.

8. a) What is Socket address? Briefly describe **connect**, **bind** and **listen** primitives.
b) List and describe the UNIX redirection operators.

CODE No.:10BT60503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

DATA WAREHOUSING AND DATA MINING

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Justify "Data rich but Information poor situation", and how to overcome this problem? Explain.
b) What makes a pattern interesting? Explain various objective measures of pattern interestingness.

2. a) List and describe the Primitives for Specifying a Data Mining task.
b) Describe the challenges to Data Mining regarding Mining Methodology and user interaction issues.

3. a) Discuss in detail with examples whenever necessary, architecture point of view of data warehouse.
b) Compare and contrast OLAP systems and statistical databases.

4. a) Discuss in detail with examples whenever necessary, the notions of association rule and support and confidence of an association rule.
b) Discuss in detail with examples whenever necessary, the notions of closed frequent item set and maximal frequent item set.

5. a) Discuss in detail with examples whenever necessary, multi level association rules and various support threshold variations for them.
b) Discuss in detail with examples whenever necessary, multi dimensional association rules from RDBMSs and DWs.

6. a) Discuss in detail with examples, the differences between classification and prediction.
b) Discuss in detail with examples, the Three broad methods by which classification is approached.

7. a) Explain the Methodologies for Stream Data Processing and Stream Data Systems.
b) Explain about Hoeffding Tree Algorithm.

8. a) What is multimedia dataset? Explain about Similarity Search in Multimedia Data.
b) Explain about Text Data Analysis and Information Retrieval.

CODE No.:10BT61001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

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) Analyze dispersion mechanisms for a single mode fiber indicating the dominating effects. Formulate a method by which the intramodal dispersion may be minimized within the single mode region.
b) Estimate the maximum core diameter for an optical fiber to behave as single mode fiber with a core refractive index of 1.48 and relative index difference of 1.5 % at a operating wavelength of 0.85μm.

2. a) Explain in detail the structure and operating characteristics of light sources.
b) Explain in detail about source coupling with necessary diagrams.

3. a) Explain about measurement of pressure and length with neat diagrams.
b) Explain about polarization maintaining fiber types.

4. a) Explain the concept of Mode locking principle in Solid state lasers.
b) An InP injection laser emits output wavelength at 0.94 μm with its longitudinal modes separated by 300 GHz. Considering the refractive index of InP to be 3.3, determine the length of the optical cavity and the no of longitudinal modes emitted.

5. a) Establish a condition to determine the direction and the velocity of blood flow using Laser -Doppler velocimeter.
b) Explain the process involved in methods of cutting of metals using laser assisted Oxygen cutting.

6. Explain how laser instruments are useful for the following applications;
i) Surgery.
ii) Gynecology.
iii) Dermatology.

7. a) Explain holography for non-destructive testing.
b) With the help of neat sketches, explain holographic computer memories.

8. a) Explain the principle of acousto-optic modulator with its performance characteristics.
b) Give the merits and demerits of acousto-optic modulator.

CODE No.:10BT61002

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

BIOMEDICAL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is a Bio-amplifier? Describe the important features of a Bio-amplifier.
   b) What are the requirements of Bio-amplifiers?

2. a) Draw and explain the generation of a typical action potential waveform.
   b) With a neat sketch, explain the transmission of impulse from nerve to muscle.

3. a) Give the constructional details and equivalent circuits of Microelectrodes.
   b) List various electrodes. Discuss briefly various electrodes used in EEG recording,

4. a) Explain the physiology of cardiovascular system with a neat diagram.
   b) List out the specifications of ECG machine.

5. a) List out various specifications of EEG and EMG machines.
   b) With the help of a neat block diagram, explain the working of an EMG machine.

6. a) Write the function of microwave Diathermy.
   b) What is meant by pacemaker and explain the operation of the same.

7. Discuss in detail about respirators with a neat diagram.

8. a) Describe in detail about the components of a CT machine.
   b) Explain the image quality considerations that are to be taken care of in a CT machine.

CODE No.:10BT61201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

OBJECT ORIENTED ANALYSIS AND DESIGN

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the principles of modeling? Explain them in detail.
b) Explain the role of object oriented modeling in design.

2. a) What are classifiers? Give brief description about them.
b) Define tagged values. Explain them with a suitable example.

3. a) Write notes on Forward engineering and Reverse engineering along with examples.
b) Draw the overall class diagram for Course Registration system.

4. a) What is a link? Explain its role in modeling the interaction diagrams. Mention the various stereo types used along with links.
b) With the help of a suitable diagram, explain the modeling of flow of control by Time Ordering.

5. a) What is Usecase Diagram? Write the Common modeling Techniques used for Usecase diagram design.
b) Describe the notations used for drawing the Activity Diagram.

6. a) What is a signal? List and explain the different types of events.
b) What are the different parts that are present in transitions? Explain them in detail.

7. a) Describe the steps to forward engineering to reverse engineering a Deployment diagram design.
b) What are the common uses of a Deployment diagram?

8. a) Draw and explain the abstract classes for digital library system.
b) Draw the sequence diagram for typical library system.

CODE No.:10BT61202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

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. a) Explain the modern social impact of computer network with real world examples.
b) Distinguish between connection oriented and connection less service in network.

2. a) Give the classification of guided transmission media.
b) Briefly discuss the functionalities of PSTN.

3. a) Illustrate the process of generation of code word in CRC encoding technique by taking an example.
b) Explain different fields in HDLC frame with the help of HDLC frame format.

4. Describe the following in detail;
i) Limited contention protocol.
ii) MACAW.

5. a) Differentiate between IPV4 and IPV6 header format.
b) Illustrate the process of congestion control using token bucket algorithm.

6. a) Give UDP header format.
b) Explain timer management in TCP.

7. a) Explain the architectural overview of World Wide Web.
b) What is HTTP? List the operation that can be performed on HTTP.

8. Explain about Public Key Cryptography.

CODE No.:10BT61301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

DIGITAL CONTROL SYSTEMS

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) State and explain sampling theorem.
b) Using different examples of data control systems, explain digital to analog conversion.

2. a) State and explain theorems of Z transforms.
b) Obtain the Z transform of the cosine function $x(t) = \begin{cases} \cos \omega t, & 0 \le t \\ 0 & t < 0 \end{cases}$.

3. a) Solve the following difference equation by the use of Z- transform method.

$$x(k+2) + 3x(k+1) + 2x(k) = 0$$

Given $x(0) = 0, \quad x(1) = 1$

b) Explain the procedure for obtaining the pulse transfer function of a closed loop transfer function.

4. a) Draw and explain the block diagram of the linear time - invariant discrete-time control system represented in state space.
b) Write about canonical forms for discrete - time state space equations by observable canonical form.

5. a) Explain the concept of controllability and observability of discrete time control system.
b) Investigate the controllability and observability of the following system.

$$\frac{Y(Z)}{U(Z)} = \frac{Z^{-1}\left(1+0.8Z^{-1}\right)}{1+1.3Z^{-1}+0.4Z^{-2}}$$

6. a) Explain about in detail the Jury stability test.
b) Explain about the stabilty analysis by use of the Bilinear transformation and Routh stability criterion.

7. a) Define all the transient response specifications of digital control system.
b) A block diagram of a digital control system is shown in Fig. (a) .
Design a compensator D(Z) to meet the following specifications.
i) Velocity error constant, $K_v \ge 4$ sec
ii) Phase margin $\ge 40°$
iii) Band width = 1.5 rad/sec

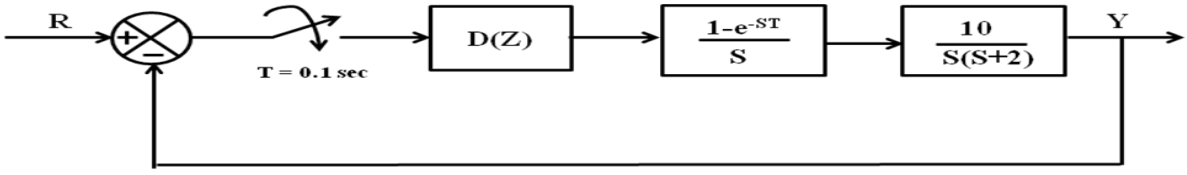


Fig. (a)

8. a) Explain the design of state feedback controller through Pole Placement.
b) State the necessary and sufficient condition for state observation.

CODE No.:10BT61302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

ROBOTICS AND AUTOMATION

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the classification of robots by control system.
   b) What are the different types of automations?

2. a) Classify the Robotic Control system with their merits and demerits.
   b) Describe the possible future applications of Robots.

3. a) Explain the features and applications of hydraulic actuators in Robotic.
   b) Describe the principal function of Robot vision system.

4. Using the grid work for a Robot with one rotational and one linear axis, show the path taken by the Robot if it is directed to move between the following sets of points in the grid using linear interpolation.
   i) Point (1, 1) and point (6, 6)
   ii) Point (2, 1) and point (8, 2)
   iii) Point (2, 2) and point (7, 5)

5. What are the general considerations in robot material handling? Explain in detail.

6. Write a VAL programme along with description of statements to palletize the object. Pallet has 4 rows that are 50 mm apart and 6 columns 40 mm apart.

7. Explain the suitability of Robots in automation and how they will be useful in reducing the manufacturing time.

8. Explain the type of Robot required for the following applications:
   i) Material handling.
   ii) Spot welding.
   iii) Spray coating.
   iv) Electronic Assembly.

CODE No.:10BT61501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

MODELING AND SIMULATION

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain selection of performance metrics to evaluate a system.
   b) Discuss the key characteristics of Poisson and Geometric Distributions.

2. a) Write the basic components of a queue with neat diagram and explain.
   b) What are the different rules used in analyzing the queue?

3. a) Differentiate between benchmarking and benchmarks. Describe about some well-known popular benchmarks.
   b) Define the term "buckets" in histograms. What are the key problems that are observed with using Single-parameter histograms? Describe with an example and with suitable diagram a multiparameter histogram .

4. a) Describe the issues in software monitor design.
   b) Compare Software ***vs*** Hardware monitor.

5. a) Mention common mistakes while evaluating the Mean.
   b) Discuss the key characteristics of Geometric Mean and Harmonic Mean.

6. a) Explain the concept of 2^2r Factorial design with example.
   b) Explain the technique of Confounding.

7. a) What is Discrete System Simulation and explain the steps involved in Simulation Study.
   b) What are the desired properties of good generators? Explain why Random -Number generators can be implemented without any overflow or truncation with example.

8. a) Explain Bonferroni approach to Multiple Comparisons of a Computer System.
   b) Write different distributions used in Input Modeling.

CODE No.:10BT70501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

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) Define regular expression. Give example. Write its applications.
b) Give regular expressions generating the following languages over $\Sigma = \{0,1\}$
i) L1 = {w | w contains atleast three 1's}
ii) L2 = {w | w has length at least 3 and its third symbol is 0}
iii) L3 = {w | w doesn't contain the substring 110}
iv) L4 = {w | every odd position of w is a 1}
v) L5 = {w | w contains at least two 0's and at most one 1}

2. Explain ambiguous grammar and LL(R) grammar.

3. Construct SLR parsing table for the following grammar.
S ! AS|b
A ! SA|a

4. a) Give a translation scheme for case statement.
b) Write short notes on various intermediate code forms.

5. a) Write about type systems and checking of types.
b) Distinguish between name equivalence and structure equivalence. Explain with example.

6. a) Discuss the various methods for translating Boolean expression.
b) Explain the process of generating the code for a Boolean expression in a single pass using back patching.

7. a) Write and explain live variable analysis algorithm.
b) Explain the use of algebraic transformations with an example.

8. a) Explain the concept of object code forms.
b) Explain the simple code generator with suitable example.

CODE No.:10BT71201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

WEB PROGRAMMING

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Create simple HTML code to add a table to your web page with different formatting options such as cellpadding, cellspacing, align, valign, border, colspan and rowspan.
b) Explain the use of and .

2. Write a Javascript to perform the following client side validations on Username, Password , Confirm Password and Email-Id fields of a form using `onSubmit` event.
i) Username (or) Password (or) Confirm Password can't be empty.
ii) Value in Password field and Confirm Password field must be the same.
iii) Email-Id using Regular Expression.

3. a) What is XML? Explain the various features of XML.
b) Write the differences between XML schema and DOM.

4. What is session tracking? Write a program to illustrate session tracking using `HttpSession`.

5. Explain the purpose of `ResultSet` class. Write a program to insert and retrieve the values from a table using JDBC.

6. a) What are the responsibilities of JSP container? Explain.
b) Describe various standard action elements in JSP.

7. a) What does the bound property in Java beans? Explain with an example code.
b) What are the advantages Java beans? Explain.

8. a) What are the benefits of using custom tag libraries?
b) What is a Tag Library Descriptor? How to Create the Tag Library Descriptor?

CODE No.:10BT71204

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Supplementary Examinations November - 2015

CRYPTOGRAPHY AND NETWORK SECURITY

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the four basic tasks in designing a security service as per the generic model.
   b) What organizations under the Internet society are responsible for the actual work of Standards development and publication?

2. a) Explain AES algorithm.
   b) Explain about Fiestal Structure.

3. a) Explain X.509 hierarchy with a hypothetical example.
   b) Explain key Distribution using Public key Cryptography.

4. Explain about S/MIME.

5. a) Explain IP security Architecture.
   b) Explain about Transport and Tunnel modes in IP security.

6. a) Explain about Secure Electronic Transactions.
   b) Explain about SSL handshake protocol.

7. a) Write about Intrusion Detection Technique.
   b) Write about distributed denial of service attacks.

8. a) Discuss in detail the two types of Proxy based firewalls.
   b) Explain how trusted systems defend Trojan horse attacks.

CODE No.:10BT3BS02

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

ENVIRONMENTAL SCIENCES

[Electrical and Electronics Engineering, Mechanical 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) How do you create awareness on environment among public to prevent indiscriminate use of environment? Explain in detail.
b) Write in detail about Biotic and Abiotic components of Ecosystem.

2. Write note on the following:
a) Indoor air pollution
b) Photochemical smog

3. a) Write a short note on Ecological Pyramids.
b) Describe the effect of current changes in the environment upon the food webs.

4. a) Explain the Forest ecosystem with suitable examples.
b) Discuss the pond ecosystem with suitable examples.

5. a) What is nuclear pollution? Write a detailed note on nuclear pollution.
b) Write an essay on solid waste management.

6. a) Explain in detail about Wild Life Protection act.
b) What are the causes and effects of global warming?

7. a) Write a detailed note on environmental ethics.
b) What are the causes and effects of cancer?

8. a) Write an essay on Energy flow in the ecosystem.
b) How the Fertilizers and Pesticides influence the human health through Bio-magnification?

CODE No.:10BT4EC01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

OPTIMIZATION TECHNIQUES

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What do you mean by objective function? Explain.
b) Write the engineering applications of optimization.

2. Find the minimum value of the function: $\mathbf{f(x_1, x_2) = x_1^2 + x_2^2 - 10x_1 - 10x_2}$, satisfying the constraints:

$$\mathbf{x_1 + x_2 <= 9}$$
$$\mathbf{x_1 - x_2 >= 6}$$
$$\mathbf{x_1, x_2 >= 0}$$

3. Solve the given problem using simplex method Max $\mathbf{Z = X_1 + X_2}$ Subjected to

$$\mathbf{2x_1 + 5x_2 \leq 18}$$
$$\mathbf{6x_1 + 5x_2 \leq 30}$$
$$\mathbf{x_1, x_2 \geq 0}$$

4. Find the basic feasible solution of the following transportation problem by Vogel's Approximation Method (VAM). Also determine the optimal transportation plan.

	1	**2**	**3**	**4**	**5**	**Available**
A	4	3	1	2	6	**80**
B	5	2	3	4	5	**60**
C	3	5	6	3	2	**40**
D	2	4	4	5	3	**20**
Required	**60**	**60**	**30**	**40**	**10**	**200 (total)**

5. Find the value of **x** in the interval (0,1) which maximizes the function **f = x(1.5 - x)** to within ± 0.05 using Fibonacci method.

6. Perform 4 iterations, using Powel's method for the function
Minimize $\mathbf{f(x) = 6x_1^2 - 6x_1x_2 - 2x_2^2 - x_1 - 2x_2}$

With $\mathbf{x_1} = \begin{pmatrix} 0 \\ 0 \end{pmatrix}^T$ and $\boldsymbol{\varepsilon} = \mathbf{0.01}$

7. Solve the problem using penalty function technique
Minimize $\mathbf{f(x) = x^2}$
Subjected to $\mathbf{g(x) = 1 - x <= 0, \quad x \in R.}$

8. Explain the concept of dynamic programming and multistage decision processes.

CODE No.:10BT4HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

MANAGERIAL ECONOMICS AND PRINCIPLES OF ACCOUNTANCY

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

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

Answer any FIVE questions
All questions carry equal marks

1. What is meant by Demand Forecasting? Explain the various steps involved in Demand Forecasting by a Firm.

2. Explain any four concepts of Cost.

3. Explain the price - output relationship under perfect competition.

4. Write a note on new economic policy 1991.

5. From the following information prepare simple cash book.

			Rs.
1 Jan 2012	Commenced business with cash	:	20,000
2 Jan 2012	Purchased goods for cash	:	15,000
3 Jan 2012	Purchased Furniture for cash	:	3,000
5 Jan 2012	Goods sold to Kamal for cash	:	5,000
6 Jan 2012	Goods purchased from Sriram	:	4,000
7 Jan 2012	Paid wages	:	2,500
8 Jan 2012	Paid for Stationery	:	1,000
9 Jan 2012	Cash paid into bank	:	1,000

6. Explain accounting cycle with examples.

7. A firm considering the following project. The details are as follows:
Investment: 70, 000.
Cash inflows are Year 1: 10,000.
Year 2: 20,000.
Year 3: 30,000.
Year 4: 45,000.
Year 5: 65,000.
Compute: (i) Net Present Value at 10% .
(ii) Payback Period.

8. Explain the features and uses of accounting software Tally.

CODE No.:10BT40501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

COMPUTER ARCHITECTURE AND ORGANIZATION

[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 about multiprocessors and multicomputers.
b) Describe in detail about Von-Neumann architecture.

2. a) Discuss about logical and shift micro operators.
b) Explain about Reduced Instruction Set Computer (RISC).

3. What is the difference between a micro processor and a micro program? Is it possible to design a micro processor without a micro program? Are all micro programmed computers also micro processors? Explain.

4. a) Design a 4-stage instruction pipeline and show how its performance is improved over sequential execution.
b) Write short notes on superscalar operations.

5. a) Explain the working principle of cache memory and its advantages.
b) Write short notes on secondary storage.

6. a) Explain about peripheral devices and components in details.
b) Explain about RS 232.

7. a) What are the characteristics of multiprocessors?
b) Explain in detail about shared memory multiprocessors.

8. Write about power PC architecture.

CODE No.:10BT41301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

CONTROL SYSTEMS

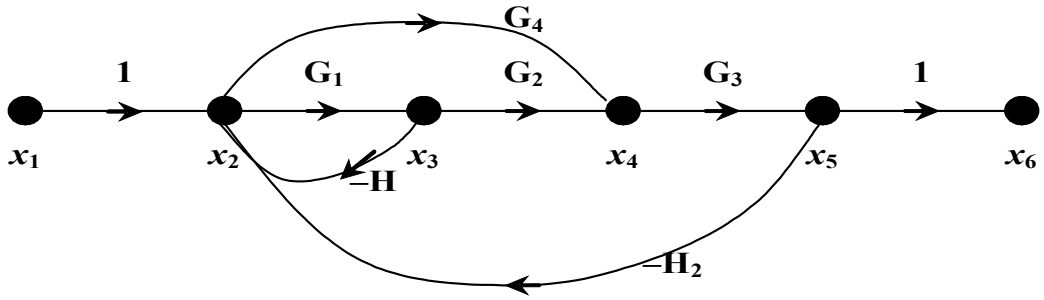
[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is control system? Explain with two examples.
b) What are the differences between open-loop and closed-loop control systems?

2. a) Derive the transfer function of a simple closed loop system.
b) Obtain the transfer function of the following signal flow graph.



3. a) What are the test signals that one used?
b) A unity feedback system has $G(s) = \frac{10}{s(s+2)}$; find the generalized error constants and steady state error.

4. a) Determine the range of 'K' for the system to be stable if Chan. Equation is **$s^4 + 20s^4 + 15s^2 + 2s + k = 0$.**
b) Explain the effect of adding a pole to G(s) + 1(s) on the root locii.

5. a) Explain the concept of phase margin and gain margin.
b) Sketch the Bode plot for the open loop transfer function $G(s)H(s) = \frac{40(1+s)}{(1+5s)(s^2+2s+1)}$.

6. Sketch the Nyquist plot and determine gain margin and phase margin of a given open loop transfer function and comment on stability. **G(s) H(s) = (1+4s) / s^2 (1+s)(1+2s)**

7. a) Determine the transfer function of a lead compensator that will provide a phase lead of 45^0 and gain of 18dB at **ω** = 5 rad/sec.
b) Explain the Lag compensator design briefly.

8. a) The state equations of a linear system are as follows.
$\dot{x} = Ax + Bu$ *and* $y = Cx$

$$A = \begin{pmatrix} -2 & 0 & 1 \\ 1 & -3 & 0 \\ 1 & 1 & -1 \end{pmatrix} \quad B = \begin{pmatrix} 1 \\ 0 \\ 1 \end{pmatrix} \quad C = \begin{pmatrix} 2 & 1 & -1 \end{pmatrix}$$

Determine the transfer function y(s)/u(s) when it is excited by unit step input
b) Explain various methods of evaluation of state transition matrix of a state equation.

CODE No.:10BT50101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

STRUCTURAL ANALYSIS - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. A train of wheel loads shown in Fig.1 crosses a span of 32 m. Calculate the maximum positive and negative shear at mid-span of the beam. Also calculate the absolute maximum bending moment.

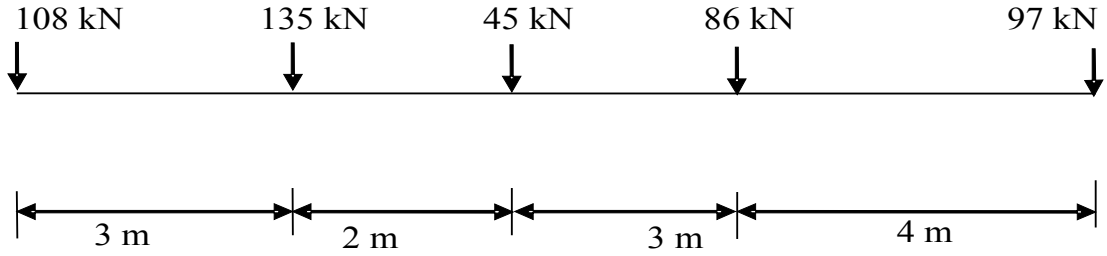


Fig.1

2. Draw the influence line diagram for the members 1, 2, 3 and 4 of the truss shown in Fig.2.

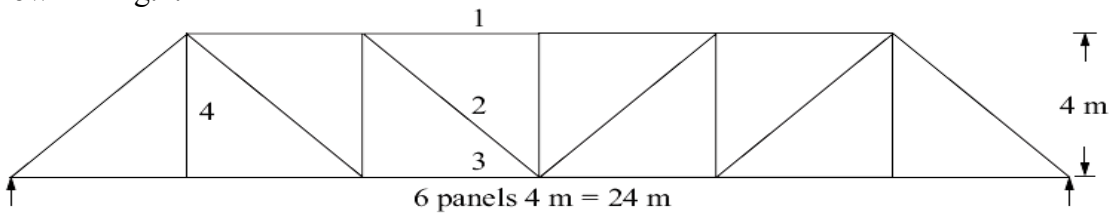


Fig.2

3. Sketch the BMD and SFD of the continuous beam shown in Fig.3, use moment distribution method. AB=12m; BC=8m . $EI_{AB}=1.5EI_{BC}$, Point Load is 20kN and UDL is 4kN/m.

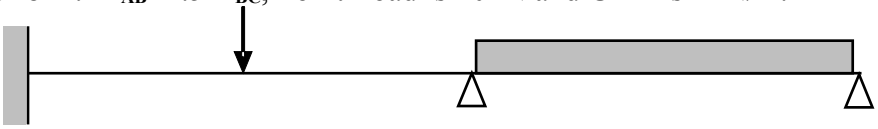


Fig.3

4. Analyse the continuous beam shown in Fig.4, using Slope-Deflection method, and draw shear force and bending moment diagrams. Locate and find the distances of the points of contra-flexure from supports. Draw elastic curve.

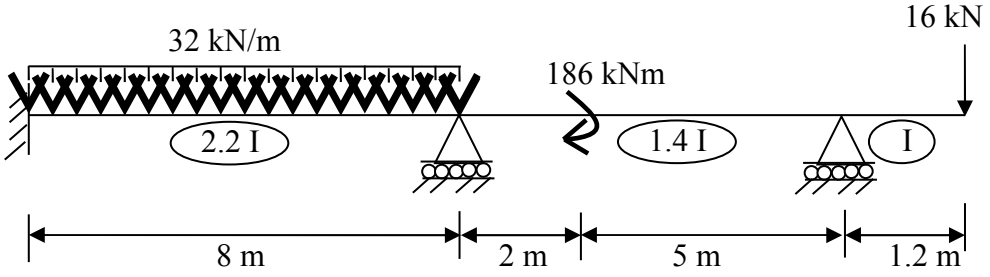


Fig.4

5. Sketch the BMD of the frame shown in Fig.5, use Kanis method. AB=10m; BC=6m; and CD = 10m. UDL is 30kN/m. EI of members is same.

Fig.3

Fig.5

6. Calculate the vertical deflection at the point E, for the truss shown in Fig.6. All the members have equal cross-sectional areas of 1255 mm² and the modulus of elasticity of members = 203 GPa.

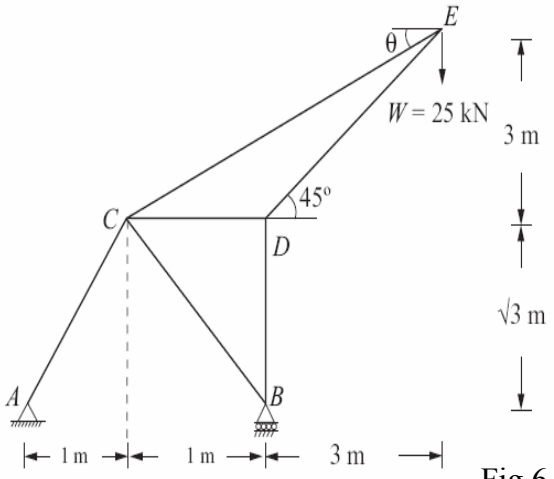


Fig.6

7. Determine the deflection and slope at the free end C of a frame ABC shown in Fig.7. UDL is 10kN/m, Horizontal load is 10kN. Column height is 6m, girder length 3m. EI is same for all members.

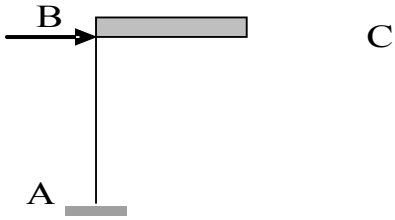


Fig.4

Fig.7

8. Analyse the frame shown in Fig.8 using Portal method. Draw the bending moment diagram and sketch elastic curve. Cross-sectional area of all columns is equal.

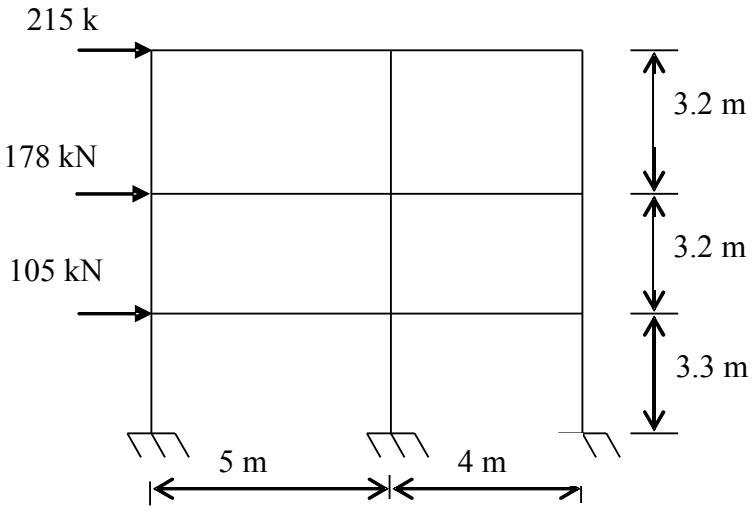


Fig.8

CODE No.:10BT50102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

REINFORCED CEMENT CONCRETE STRUCTURES - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. The main stair of an office building has to be located in a stair measuring 3.0 m x 4.50 m. The vertical distance between the floors is 3.30 m. Design the stairs. Allow a L.L. of 3000 N/m^2. Use M20 concrete and Fe 415 steel.

2. Design a combined footing for two square columns of sizes 450 mm and 500 mm which are 4 m apart and carry axial loads of 1000 kN and 1200 kN respectively. The maximum projection beyond the face of each column is restricted to 500 mm. The safe bearing capacity of the soil is 200 kN/m^2. Use M20 grade concrete and Fe 415 grade steel.

3. A 400 mm dia circular column carries a factored axial load of 1000 kN and is resting on two piles of 200 mm dia each. Design a pile cap using M20 concrete.

4. Determine suitable dimensions of a retaining wall which is required to support a bank of earth 5m above ground level. The backfill is horizontal. The unit weight of backfill earth is 16kN/m^3 and angle of shearing resistance is 30^0. The coefficient of friction between soil and concrete is 0.5. SBC of soil may be taken as 1.50 kN/ m^2 at a depth of 1.3 m below the ground.

5. Design a roof dome top ring beam of an over head tank of capacity 600 kL. The materials used are M20 concrete and HYSD steel. Sketch the details of reinforcement.

6. An RCC circular tank is resting on ground firmly has to carry a capacity 350kL. Design the tank if the walls are rigidity fixed to the base.

7. Design an underground water tank with dimensions 12 m x 5 m x 5 m. The angle of repose of the soil is 30^0 and the density of the soil is 18 kN/m^3. The soil is saturated.

8. A post tensioned prestressed concrete beam spanning 12 m and having a cross section of 200 mm x 350 mm is prestressed with a straight cable located at a constant eccentricity of 50 mm. The initial stress in the cable is 1000 N/mm^2 having an area of 320 mm^2. Calculate the percentage loss of stress in the cable using the following data :

Shrinkage strain in concrete = 200×10^{-6}
Friction coefficient for wave effect = 0.0015/m
Slip at anchorage = 1 mm
Relaxation of steel stress = 5% of initial stress
E_s = 2.1×10^5 N/mm^2
E_c = 0.35×10^5 N/mm^2

CODE No.:10BT50103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

ENGINEERING HYDROLOGY

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe with a neat sketch hydrologic cycle. Explain water scenario in Andhra Pradesh.
b) A catchment area has seven rain gauge stations. In a year the annual rainfall recorded by the gauges are as follows :

Station	:	A	B	C	D	E	F	G
Rainfall (cm)	:	130.0	142.1	118.2	108.5	165.2	102.1	146.9

For a 5% error in the estimation of the mean rainfall, calculate the minimum number of additional stations required in the catchment.

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 55 cm. 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) Explain the factors affecting infiltration. State any two practical applications of the concept of infiltration.
b) Discuss different methods of estimating evapotranspiration. What is the practical application of estimation of evapotranspiration?

4. a) Explain the various physiographic factors which affect runoff.
b) What is a flow duration curve? How is it constructed?

5. a) Differentiate between a flood hydrograph and a direct runoff hydrograph. Stating the limits of applicability of UH, discuss the procedure of deriving a 3 Hr- UH from a 4Hr-UH.
b) Analysis of annual flood series of a river yielded a sample mean of 1000 cumec and standard deviation of 500 cumec. Estimate the design flood of structure on this river to provide 90**%** assurance that the structure will not fail in the next 50 years. Use Gumbel's method and assume the sample size to be very large.

6. a) Define unit hydrograph. State its applications, limitations and assumptions.
b) Rainfall of magnitudes 3.8 cm and 2.8 cm occurring on two consecutive 4-Hr durations on a catchment of area 27 sq.km produced the following hydrograph of flow at the outlet of the catchment. Estimate the rainfall excess and Ø -index.

Time from start of Rainfall (hr)	-6	0	6	12	18	24	30	36	42	48	54	60	66
Observed flow (cumec)	6	5	13	26	21	16	12	9	7	5	5	4.5	4.5

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) What is recuperation test? How is it conducted on the field?
b) A pumping test was conducted in an aquifer to a depth of 15 m where a bed of clay was encountered. GWL was at the surface. Observation wells were located at distances of 3 m and 7.5 m from the pumped well. At a discharge of 3.6 lps from the pumping well a steady state was attained in 25 hrs. The draw downs at the observation wells were found to be 1.65 m and 0.36 m. Compute the transmissibility of the aquifer.

CODE No.:10BT50104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

SOIL MECHANICS

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define the terms: i) porosity ii) degree of saturation iii) air content iv) submerged unit weight v) specific gravity.

b) A partly saturated soil from an earth fill has a natural water content of 19% and a bulk unit weight of 19.33 kN/m^3. Assuming the specific gravity of soil solids as 2.7, compute the degree of saturation and void ratio. If subsequently soil gets saturated, determine the buoyant unit weight and saturated unit weight.

2. a) Define and explain: Liquid limit; Plastic limit; Shrinkage limit; and Plasticity index. Briefly describe the procedure to determine the liquid limit of a soil.

b) The dry unit weights of a sand in the loosest and densest states are respectively 13.34 kN/m^3 and 21.40 kN/m^3. Assuming the specific gravity of the solids is 2.67, determine the relative density of sand with porosity of 30%.

3. a) Explain the constant head method of determining the coefficient of permeability of soil.

b) Derive the expression to determine the average permeability in vertical direction of a soil deposit consisting of a number of layers.

4. a) What is a flow net? What are the properties of a flow net?

b) A boring leg indicates the pressure of 5 m of silty sand from the ground surface followed by 3 m of coarse sand. The ground water table is located at the top of coarse sand layer. The properties of silty sand are G = 2.67, e = 0.90 and that of coarse sand are G = 2.65, e = 0.60. compute and sketch the total, neutral and effective strength distribution with depth.

5. a) Using Boussinesq's expression , derive the expression for vertical stress at depth 'z' under the centre of a particular area of radius 'a' loaded uniformly with a load 'q' per unit area at the surface of the soil mass.

b) A line load of 90 kN/m run extends to a long distance. Determine the intensity of vertical stress at a point 1.5 m below the surface.

i) Directly under the line load and

ii) At a distance 1m perpendicular to the line. Use Boussinesq's theory.

6. a) Explain the field compaction methods and field compaction control.

b) The following observations were recorded in a standard Proctor's compaction test. The volume of the mould = 945 cc, specific gravity of solids = 2.67. Determine the optimum moisture content and maximum dry density. Also plot the zero air void line.

Water content (%)	19	20	21.2	22.5	24
Weight of compacted soil (gms)	1650	1720	1770	1785	1765

7. a) Explain the following terms:
   (i) Coefficient of compressibility
   (ii) Coefficient of volume change
   (iii) Normally consolidated soil
   (iv) Over consolidated soil
   (v) Under consolidated soil
   (vi) Secondary consolidation

b) Two clay layers A and B are 5 m and 6 m thick respectively. Time taken by layer A to reach 50% consolidation is 4 months. Calculate the time taken by layer B to reach same degree of consolidation. Layer A has double drainage, while layer B has single drainage. Coefficient of consolidation of layer A is twice that of layer B.

8. a) Briefly outline the triaxial compression test, also mention its advantages compared to direct shear test.

b) The unconfined compression strength of a soil is found to be 150 kN/m^2. A sample of the same soil failed at a deviator stress of 200 kN/m^2 when it is tested in a consolidated undrained triaxial compression test with a cell pressure of 50 kN/m^2. Determine the shear parameters of the soil.

CODE No.:10BT50105

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

ENGINEERING GEOLOGY

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Describe different sub-branches in Geology and write aim and objectives of studying Engineering Geology in Civil Engineering.

2. Describe the Megascopic properties that are useful in identification of minerals with mineral examples. List the minerals of Moh's scale of hardness.

3. Define the term metamorphism. Write a detailed description of the following rock types:
i) Gneiss,
ii) Quartzite,
iii) Marble,
iv) Slate.

4. What is Strike and Dip? Elucidate the classification of folds with neat sketches.

5. Draw the neat sketch of Hydrologic cycle and write the fundamental properties which controls the occurrence and distribution of groundwater.

6. Write short notes on the following:
a) Porosity and permeability
b) Transmissibility and Storage coefficient

7. Examine the relevance of detailed geological studies in dam site selection process.

8. Explain the following:
a) Lithological Investigations in Tunnels
b) Logging of Tunnel and its necessity, Popping
c) Significance of bedding and structures in Tunneling

CODE No.:10BT50201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

POWER ELECTRONICS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe different modes of operation of thyristor with the help of its static V-I characteristics.
b) Explain dynamic characteristics of a thyristor with neat sketches.

2. a) Why SCRs are required to be connected in parallel? What are the problems associated with parallel connection of SCRs? How they are eliminated?
b) Calculate the number of SCRs, each with rating of 500 V, 75 A required in each branch of a series and parallel combination for a circuit with the total voltage and current rating of 7.5 KV and 1000A. Assume derating factor of 14%.

3. a) Write short notes on protections schemes against **dv/dt** and over voltages.
b) A SCR circuit operates from 300V **dc** supply, has series inductance of 4μH. A resistance of 4Ω and capacitance of 0.2μF is connected across the SCR. Calculate the safe **dv/dt** and **di/dt** ratings.

4. a) Explain the principle of operation of single phase half wave circuit with RL load and freewheeling diode with neat sketches. Derive the expression for load voltage.
b) A 230V, 50Hz, one-pulse SCR controlled converter is triggered at a firing angle of 40^{o} and the load current extinguishes at an angle of 210^{o}. Find the circuit turn off time, average output voltage and the average load current for R=5Ω and L=2mH.

5. a) Explain the operation of a 3-ϕ, fully controlled bridge converter with inductive load. Draw the voltage and current waveforms for $\alpha=70^{o}$. List the firing sequence of SCR's.
b) Derive the expression for average load voltage.

6. Describe the basic principle of working of single phase step down cycloconverter with the help of bridge type configuration.

7. a) Draw the schematics of step-down and step-up choppers. Explain in detail.
b) A step-chopper has input voltage of 220V and output voltage of 660V. If the non-conducting time of thyristor -chopper is 100**μs**, compute the pulse width of output voltage. In case pulse width is halved for constant for constant frequency operation, find the new output voltage.

8. The single-phase, half-bridge inverter, supplies a resistive load of 10Ω. If the supply voltage V=200 volts. Determine the following:
a) RMS output voltage at the fundamental frequency.
b) output power.
c) half-cycle average, RMS and peak current of each thyristor.
d) input power factor.
e) distortion factor.

CODE No.:10BT50202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

AC MACHINES

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Compare following:
i) Distributed and concentrated winding ii) Integral slot and fractional slot winding
iii) Cylindrical and salient pole alternator iv) Stationary field and rotating field alternator

2. a) What are the causes of harmonics in the voltage waveform of an alternator? How can these be minimized?
b) The effective resistance of a 2200 V, 50 Hz, 440 KVA, single phase alternator is 0.5 Ohm on short circuit a field current of 40 A gives the full load current of 200 A. The EMF on open circuit with the same excitation is 1160 V. Calculate the synchronous reactance and SCR.

3. The OC and SC test readings for 3-phase Y-connected 50 Hz 1000 KVA 2000V alternator are as follows:

Field current (A)	:	10	20	25	30	40	50
OC Voltage (V)	:	800	1500	1760	2000	2350	2600
SC current (A)	:	--	200	250	300	--	--

The R_a per phase is 0.2 ohms. Find the F.L percentage regulation at 0.8 Lag and 0.6 Lead PF by MMF method.

4. a) In what respect is the operation of an alternator on infinite bus bar different from parallel operation of two alternators? What is the effect of change in excitation and change in mechanical power input on operation of an alternator on infinite bus?
b) The speed regulation of two 500 KW 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 800 KW and also find the load at which one machine ceases to supply any portion of the load?

5. a) Show that the locus of stator current for a constant output of 3-phase synchronous motor connected to a constant voltage, constant frequency bus-bar is a circle.
b) Explain following:
i) Hunting. ii) Starting methods of synchronous motor.

6. Explain following:
i) Cross field theory. ii) Split phase motors.
iii) Applications of single phase induction motor.

7. a) Explain principle and operation of Universal motor with neat sketch.
b) Compare Universal motor with A.C Series motor.

8. a) For small and sensitive servo mechanism give four reasons why AC servo motors are generally preferred to DC servo motors.
b) Explain the operation of variable reluctance stepper motor.

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CODE No.:10BT50203

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

ELECTRICAL POWER TRANSMISSION

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the concept of GMR and GMD.
b) Calculate the inductance and reactance of each phase of a three phase 50 Hz overhead line which has conductors of 2.5 cm dia. The distance between the three phases are 5 cm between **a** and **b**, 4 cm between **b** and **c** and 3m between **c** and **a**. Assume that the phase conductors are regularly transposed.

2. a) Explain the classification of transmission lines.
b) Explain, why ABCD parameters are used for evaluating performance of a transmission line.

3. Explain the following:
i) Surge impedance of a transmission line.
ii) Regulation, efficiency, losses and power factor at each end of the line, how these characteristics are affected by the constants of the line.

4. Derive the expression for characteristic impedance (Z_C) Hint: [$Z_C = \sqrt{\frac{l}{c}}$ *and* $\sqrt{\frac{z}{y}}$]

5. a) What are the advantages of symmetrical components?
b) The line-to-line voltages in an un-balanced three-phase supply are $V_{ab} = 1000 \angle 00$, $V_{bc} = 866 \angle -1500$, $V_{ca} = 500 \angle 1200$. Determine the symmetrical components for line and phase voltages, then find the phase voltages V_{an}, V_{bn} and V_{cn} .

6. a) Why the voltage does not divide equally across the various units of string insulators? Explain.
b) Discuss various methods by which the voltage across the units can be equalized. Illustrate your answer by a string of 3 insulator units.

7. Prove that the overhead line has form catenary curve.

8. a) By means of a diagram describe the construction of a underground cable.
b) The inner and outer diameter of a cable are 3 cm and 8 cm respectively. The cable is insulated with two materials having permittivity of 5 and 3.5 with corresponding stresses of 38 kv/cm and 30kv /cm. Calculate the radial thickness of each insulating layer and the safe working voltage of the cable.

CODE No.:10BT50301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

THERMAL ENGINEERING - II

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain with the help of neat diagram a 'regenerative cycle'. Also derive an expression for its thermal efficiency.

b) In a Rankine cycle, the steam at inlet to turbine is saturated at a pressure of 35 bar and the exhaust pressure is 0.2bar.
Determine: i) The pump work; ii) The turbine work;
iii) The Rankine efficiency; iv) The condenser heat flow;
v) The dryness at the end of expansion. Assume flow rate of 9.5 kg/s.

2. a) What are the advantages of artificial draught over natural draught?

b) The following data refer to a boiler plant consisting of an economizer, a boiler and a super heater. Mass of water evaporated per hour=5940kg, mass of coal burnt per hour=675kg, L.C.V. of coal=31600 kj/kg, pressure of steam at boiler stop value=14bar, temperature of feed water entering the economizer=32^0c, temperature of feed leaving the economizer=115^0c, dryness fraction of steam leaving the boiler and entering super heater=.96, temperature of steam leaving the super heater= 260^0c, specific heat of superheated steam=2.33.
Determine: i) Percentage of heat in coal utilized in economizer, boiler and super heater;
ii) Overall efficiency of boiler plant.

3. a) Steam at a pressure of 11.8 bar and at 220^0C is discharges through convergent divergent nozzle to a back pressure a 1.18 bar. The mass flow rate is 16.45 kg/kW h. If power developed is 184 kW.
Determine i) Number of nozzle required if throat diameter is 7 mm.
ii) Exit diameter and velocity.
The 8% enthalpy loss is in divergent part only.

b) Explain the terms related to convergent divergent nozzle
i) Shock ii) Overexpansion iii) Under expansion.

4. a) The data pertaining to an impulse turbine is as follows:
Blade speed = 300 m/s, isentropic enthalpy drop in the nozzle = 450 kJ/kg, nozzle efficiency = 90%, nozzle angle = 20^0, blade velocity co-efficient = 0.85, blade exit angle = 25^0.
Draw the velocity diagrams and calculate the following for the mass flow rate of 1 kg/s:
i) inlet angle of moving blades ii) axial thrust
iii) driving force on the wheel iv) diagram efficiency.

b) What do you mean by governing of a turbine? Mention different governing methods.

5. a) Derive the degree of reaction for a reaction turbine and deduce it as 50% if the blades are symmetrical.

b) In a 50% reaction turbine stage running at 3000 r.p.m. and the inlet and exit angle are $22^0$and 30^0 respectively. The mean diameter of the drum is 1 m and the steam flow rate by 1000 kg /minute with stage efficiency of 85%.

Determine : i) power output of stage ii) specific enthalpy drop in the stage

iii) percentage increase in relative velocity of the steam when it flows over the moving blades.

6. a) In a surface condenser the vacuum is maintained as 700 mm of Hg when the barometer reads 750 mm of Hg. If the temperature of condensate is 20^0C, Determine:

i) Vacuum efficiency

ii) Condenser efficiency if the inlet and out let temperature of cooling water are 20^0C and 29^0C respectively.

b) Describe the working principle of Edward air pump with a suitable diagram.

7. a) Explain with a neat sketch the working of a constant volume combustion turbine.

b) State the fundamental differences between the jet propulsion and rocket propulsion.

8. a) A turbojet engine is travelling at 920 km/h at standard sea level conditions. The ram efficiency is 0.87 and compression ratio is 4.3, the compressor efficiency is 0.82 and the burner pressure loss is 2%. The air fuel ratio is 0.0119, the turbine inlet temperature is 950 K, the turbine efficiency is 0.83 and equivalent nozzle efficiency is 0.96.

Calculate: i) the specific gross thrust

ii) the thrust specific fuel consumption.

b) Define and derive the specific impulse and propulsive efficiency of rocket engine.

CODE No.:10BT50302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

DYNAMICS OF MACHINERY

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain how inertia of connecting rod is found.
b) A horizontal steam engine running at 240 rpm has a bore of 300 mm and stroke 600 mm. The connecting rod is 1.05 m along and the mass of reciprocating parts is 60kg. When the crank is 60° past its inner dead center, the steam pressure on the cover side of the piston is 1.125N/mm^2 while that on the crank side is 0.125N/mm^2. Neglecting the area of the piston rod.
Determine : i) The force in the piston rod ii) The turning moment on the crankshaft.

2. a) What is the gyroscopic effect on pitching and rolling of ship?
b) The rotor of a turbine installed in a boat with its axis along the longitudinal axis of the boat makes 1500 rpm clockwise when viewed from the stern. The rotor has a mass of 750 kg and a radius of gyration of 300 mm. if at an instant, the boat pitches in the longitudinal vertical plane so that the bow rises from the horizontal plane with an angular velocity of 1 rad/s. determine the torque acting on the boat and the direction in which it tends to turn the boat at the instant.

3. a) What is clutch? Make a sketch of single-plate clutch and describe its working.
b) What is brake? What is the difference between a brake and a clutch?

4. The turning-moment diagram for a petrol engine is drawn to a vertical scale of 1 mm to 6 N.m and a horizontal scale of 1 mm to 1°. The turning moment repeats itself after every half revolution of engine. The areas above and below the mean torque line are 305, 710, 50, 350, 980 and 275 mm^2. The rotating parts amount to a mass of 40 kg at a radius of gyration of 140 mm. Calculate the coefficient of fluctuation of speed if the speed of the engine is 1500 rpm.

5. a) What are centrifugal governors? How do they differ from inertia governors?
b) In a Hartnell governor, the lengths of the ball and the sleeve arms are equal. The extreme radii of rotation of the balls are 60 mm and 80 mm and the corresponding speeds are 160 rpm and 175 rpm. Each ball has a mass of 2 kg. Find the spring stiffness and the initial compression of the central spring.

6. An engine has two cylinders arranged in a form of V, the centre lines of the cylinders being in one plane and inclined at 45° on either side of a central vertical line. The two connecting rods work on the same crank. The mass of the reciprocating part for each cylinder is 0.5 kg, crank radius is 35mm and the connecting rod length is 130 mm.
Show that the vertical force on this engine due to secondary inertia force is zero and that if suitable balance masses are attached to the crank shaft the primary inertia forces can also be reduced to zero. For this value of the balanced masses, find the greatest out-of-balance force acting on the engine in the horizontal direction when the crank shaft speed is 2500 r.p.m.

7. a) Explain Whirling of shafts.
b) A shaft 180mm diameter is supported in two bearings 2.5 metres apart. It carries three discs of mass 250 kg, 500 kg and 200 kg at 0.6 m, 1.5 m and 2 m from the left hand. Assuming the mass of the shaft 190 kg/m. determine the critical speed of the shaft. Young's modulus for the material of the shaft is 211 GN/m^2.

8. a) Explain Maxwell's reciprocal theorem.
b) Write short notes on 'Properties of Structural materials for Vibration Control'.

CODE No.:10BT50303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

MACHINE TOOLS

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) State the assumptions of Merchant's theory. Draw and explain Merchant's circle.
b) Explain temperature measurement by tool work thermocouple method.

2. a) List different taper turning methods and explain any one method of taper turning in detail.
b) Differentiate between single spindle and multi spindle automatic lathes and discuss the working of multi spindle automatic lathe.

3. a) Draw a neat sketch of an automatic feed mechanism in shaping machine and explain its working.
b) Under what conditions, planning operations would be preferred over other machining processes.

4. a) Describe the constructional features of a deep hole drilling machine.
b) Enumerate the differences between drilling, boring, reaming and broaching operations.

5. a) Differentiate between up milling and down milling and explain why the diameter of a face milling cutter is wider than the work piece.
b) What is indexing? Explain the working of a universal dividing head.

6. a) Classify various types of grinding machines and explain about tool and cutter grinder.
b) Explain the factors considered in selection of grinding wheel.

7. a) Differentiate between Lapping and Honing processes.
b) Explain Buffing and Polishing operations.

8. Briefly explain the following types of jigs with the help of neat sketches:
a) Channel jig
b) Pot jig
c) Leaf jig
d) Box jig

CODE No.:10BT50304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

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 in the design of a machine element?
b) List out various constraints encountered by a design engineer.

2. a) Distinguish between *Strength* and *Rigidity*.
b) A stepped rod has a diameter of 200 mm for a length of 1 m, a diameter of 150 mm for a length of 0.8 m and a diameter of 100 mm for a length of 1 m. The rod is subjected to a tensile load of 5 kN. Calculate the factor of safety, if the critical stress of the material is 1.2 MPa.

3. A composite bar made up of aluminium bar and steel bar, is firmly held between two unyielding supports as shown in Fig.1.

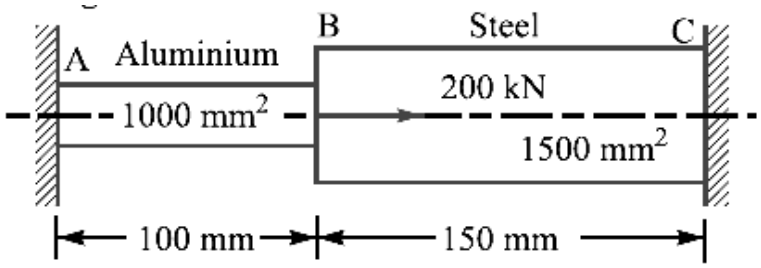

Fig.1.

An axial load of 200 kN is applied at B at 47°C.
Find the stresses in each material, when the temperature is 97°C.
Take E_a = 70 GPa ; E_s = 210 GPa ; $\alpha_a = 24 \times 10\text{-}6/^\circ C$ and $\alpha_s = 12 \times 106/^\circ C$.

4. a) What is the difference between caulking and fullering? Explain with the help of neat sketches.
b) A tie bar in a bridge consists of flat 350 mm wide and 20 mm thick. It is connected to a guest plate of same thickness by a double cover butt joint. Design an economical joint if the permissible stresses are:
σ_t = 90 MPa, σ_c = 150 MPa and τ = 60 MPa.

5. a) What is meant by bolts of uniform strength? Mention the practical applications of such bolts.
b) A mild steel cover plate is to be designed for an inspection hole in the shell of a pressure vessel. The hole is 120 mm in diameter and the pressure inside the vessel is 6 N/mm^2. Design the cover plate along with the bolts. Assume allowable tensile stress for mild steel as 60 MPa and for bolt material as 40 MPa.

6. a) What is a turn buckle? Explain its purpose.
b) A knuckle joint is required to withstand a tensile load of 25 kN. Design the joint if the Permissible stresses are:
σ_t = 56 MPa, σ_c = 70 MPa and τ = 40 MPa

7. a) A hollow shaft has greater strength and stiffness than a solid shaft of equal weight. Justify the statement.

b) A steel shaft transmitting 15 kW at 200 RPM is supported on two bearings 750 mm apart and has two gears keyed to it. The pinion having 30 teeth of 5 mm module is located 100 mm to the left of the right hand bearing and delivers power horizontally to the right. The gear having 100 teeth of 5 mm module is located 150 mm to the right of the left hand bearing and receives power in a vertical direction from below. Using an allowable stress of 54 MPa in shear, determine the diameter of the shaft.

8. a) What is a key? State the effect of keyway cut into a shaft.

b) Design a rectangular key for a shaft of 50 mm diameter. The shearing and crushing stresses for the key material are 42 MPa and 70 MPa.

CODE No.:10BT50305

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

INDUSTRIAL ENGINEERING AND MANAGEMENT

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define planning. Explain the steps involved in planning.
b) Discuss the significance and limitations of planning.

2. a) Differentiate between rural and urban sites for plant location.
b) Explain the importance of travel chart by taking suitable example.

3. a) Explain the procedure of method study.
b) Calculate the standard time for the following information.
Observed time - 15 minutes, rating factor - 120% , personal allowance - 5 % , fatigue allowance -2 % , delay allowance- 2 %.

4. a) Derive equation for a simple EOQ and state the assumptions you made.
b) Write short notes on value analysis.

5. a) What are the check sheets? Explain the salient features of any two types of check sheets.
b) Explain the following double sampling plan with a neat flow chart.
N = 1000, n_1=50, c_1=0, n_2=50,c_2=3. State its merits and demerits.

6. a) Explain, how preventive maintenance is better than corrective maintenance.
b) Define the term reliability. What did you understand justify with an example?

7. Who is an entrepreneur? List out various functions of entrepreneur.

8. a) Differentiate between job evaluation and merit rating.
b) Explain salient features of factories act 1956.

CODE No.:10BT50401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

ANALOG COMMUNICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) The modulating signal in an AM-SC system is a multiple-tone signal given by **m(t) = 17cos(2π x 200)t** modulates a carrier **c(t) = 25cos(2π x 5000)t**. Find the total modulation index and Plot the single-sided spectrum .
b) Explain AM demodulation using Envelope detector.

2. a) Explain about frequency domain description of DSB-SC wave.
b) Explain about Costas loop.

3. a) Generate AM-SSB-USB modulated wave using Phase shift method.
b) Write about VSB generation and explain why VSB system is widely used for TV broadcasting.

4. a) Explain about wide band FM and calculate the average power of the FM wave.
b) Explain about balanced frequency discriminator.

5. a) Derive the expression for figure of merit of DSB-SC wave.
b) Explain how you can improve the SNR ratio at the output of a receiver by using PRE-Emphasis and DE-Emphasis circuit.

6. a) Explain about high level AM transmitter.
b) Discuss the effect of feedback on performance of AM transmitter.

7. a) Explain super heterodyne receiver type for AM.
b) Explain the working of AGC.

8. a) What is pulse position modulation? Explain the method to generate PPM wave from PWM wave.
b) What is Multiplexing and explain Time Division Multiplexing.

CODE No.:10BT50402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

ANTENNAS AND WAVE PROPAGATION

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define the terms:
   i) Effective length
   ii) Effective aperture area
   b) Calculate effective length and effective aperture area of antenna whose radiation resistance is 73 ohms.

2. a) Explain the different current distributions of an antenna.
   b) A dipole antenna of length 10 cm is operating at a frequency of 100 MHz with terminal current I_0=100mA. At t=1sec, $\theta=45^0$, r=3m. Find the magnitude of E_r, E_θ and H_φ.

3. a) Draw the radiation pattern of 8 - isotropic elements fed in phase, spaced $\lambda/2$ apart with the principle of pattern multiplication.
   b) Write short notes on:
   i) Binomial arrays
   ii) Phased arrays

4. a) Explain the basic principle of operation of lens antenna. Distinguish between the different types of lens antenna, explaining their curvature profiles.
   b) What are the design considerations for Monofilar helical antenna in Axial and Normal Modes operations.

5. a) Explain about salient features of Microstrip antennas.
   b) What are the advantages and limitations of Microstrip antennas?

6. a) Discuss about Non-Metallic Dielectric lens antennas. Explain why zoning is used in lenses.
   b) Explain the basic principle of operation of lens antennas. Explain their curvature profiles.

7. a) Describe briefly the salient features of ground wave propagation.
   b) What should be the polarization of EM wave for the ground wave propagation? Justify.
   c) Explain the term “wave tilt of surface waves”.

8. a) Describe any two types of fading normally encountered in radio wave propagation. How are the problems of fading overcome?
   b) Determine the change in the electron density of E - layer when the critical frequency changes from 4 MHz to 1 MHz between mid - day and sun-set.

CODE No.:10BT50403

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

LINEAR IC APPLICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Draw and explain the operation of dual input balanced differential amplifier.
b) For a differential amplifier R_C = 1KΩ, R_{in}= 1KΩ, h_{fe} = 1KΩ and R_E = 2KΩ neglecting h_{oe} . Calculate the difference mode gain and common mode gain. Also calculate CMRR in db. The amplifier is a dual input balanced differential amplifier.

2. a) Define the following parameters to an op-amp.
i) Input bias current ii) Input offset current
iii) Input offset voltage iv) Slew rate
b) Discuss the need of a level shifting network, Describe any two level shifting networks giving their merits and demerits.

3. a) Describe how an op-amp can be used as on instrumentation amplifier in detail.
b) Construct a circuit to realize $\mathbf{V_{out} = 10\ V_1 + 20\ V_2 - 5\ V_3}$.

4. a) Explain with the help of neat diagram and waveforms working of triangular wave generator.
b) Derive the expression for output frequency of the triangular wave generator.

5. a) Design a first-order low-pass and a high-pass Butterworth active filters to satisfy the requirements.
b) Write notes on all-pass filter. Draw the suitable circuit diagram and discuss about phase shift between input and output voltages.

6. a) Explain the first-order low pass filter and also sketch its frequency response
b) Design a LPF with Cut-off frequency f_C=1KHz, R_0=600Ω.

7. a) Explain the working of a dual slope ADC in detail.
b) Write short notes on the following:
i) Resolution.
ii) Linearity.
iii) Settling time of a ADC.

8. a) Explain a 4 quadrant multiplier with neat sketches.
b) Explain in detail about any 2 applications of IC1496.

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CODE No.:10BT50404

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

DIGITAL IC APPLICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the advantages and disadvantages of CMOS technology? Discuss about the recent developments in the process technology.
b) Draw the CMOS circuit diagram of tri-state buffer. Explain the circuit with the help of logic diagram and function table.

2. a) Design a TTL three state NAND gate and explain the operation with the help of function table.
b) Compare CMOS logic families.

3. a) Explain various data types and objects supported by VHDL. Give the necessary examples.
b) Explain the advantages and disadvantages of different logic styles.

4. a) Design the logic circuit and write a data flow style VHDL program for the following function.
$F(x) = \Sigma A,B,C,D\ (0,3,4,8,9,12) + d(1,6,11)$
b) Discuss about process statement and its use in the VHDL program.

5. a) Design a 2-digit BCD adder with logic gates. Using this logic write VHDL program using structural model.
b) Write VHDL code for 74x280 parity generator.

6. Explain the operation of barrel shifter and write a VHDL. Program for 16 bit barrel shifter for left and right circular shifts.

7. a) Write VHDL code for 4-bit up-down counter with synchronous reset and clear inputs.
b) Explain the working of ring counter and write VHDL code for 4-bit ring counter.

8. a) Explain:
(i) internal structure . (ii) timing and applications of ROM.
b) Explain in detail about DRAMS.

CODE No.:10BT50421

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

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) State and prove Gauss's law. Give three applications of Gauss's law with suitable examples.
b) Given that electric flux density $\mathbf{D} = \mathbf{z}\rho\ \mathbf{cos}^2\phi\ \ \mathbf{a_z}\ \mathbf{C/m^2}$, use Gauss's law to calculate the charge density at **(1, π /4 , 3)** and the total charge enclosed by the cylinder of radius of 1 m with **$-2 \le z \le 2$.**

2. a) Derive equation of continuity.
b) Derive an expression for capacitance between two concentric spheres.

3. a) Derive the expressions for magnetic field intensity H in different regions of long co-axial transmission line.
b) An isotropic material has magnetic susceptibility of 3 and magnetic flux density B = 10y a_x mWb/m^2. Determine J, H, and μ_r.

4. a) Derive whether the following fields $\overline{E} = 2\sin x \sin t\ \overline{a_y}$ and $H = \frac{2\cos x \cos t}{\mu}\ \overline{a_z}$ satisfies Maxwell's equations.
b) Derive boundary conditions for dielectric-dielectric media.

5. a) Discuss about uniform plane waves in lossless dielectrics, and establish the relationship between electric and magnetic fields in the medium.
b) The electric field in free space is given by E = 50 cos (10^8 t + βx) a_y V/m.
(i) Find the direction of wave propagation.
(ii) Calculate β and the time it takes to travel a distance of half-wavelength.
(iii) Sketch the uniform plane wave at t = 0, T/4, and T/2.

6. a) For the case of reflection by a perfect dielectric with oblique incidence, explain the two possible polarizations with appropriate sketches and explain the Snells laws.
b) State and prove pointing theorem.

7. a) What is EMI? Explain the EMI problem with example.
b) What are the basic differences between conducted and radiated emission?

8. Write short notes on:
a) Grounding
b) Cable shielding

CODE No.:10BT50422

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

LINEAR AND DIGITAL IC APPLICATIONS

[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) Present the various IC classifications according to the number of components integrated on to the chip.
b) Define the terms input offset voltage, thermal drift, error voltage, noise and CMRR and give their significance in practical circuits.

2. a) Draw the circuit diagrams of a voltage to current converter if the load is i) Floating and ii) grounded.
Is there any limitation on the size of the load when grounded?
b) What are the limitations of an ordinary op-amp differentiator?
Draw the circuit of a practical differentiator which eliminates these limitations.

3. a) Explain how 555 timer can be used as Schmitt trigger with a neat circuit diagram.
b) Draw the block diagram of PLL and explain its each block.

4. a) Write a detailed note on CMOS logic families.
b) Write a short note on CMOS dynamic electrical behaviour.

5. a) Design, draw and explain a 2-input ECL NOR gate transistor circuit with its function table.
b) List out TTL families and compare them with reference to various important parameters.

6. a) Explain briefly time dimension synthesis.
b) Explain with an example the syntax and the function of the following VHDL statements.
i) Loop statement ii) Case statement.

7. a) Design a logic circuit to detect the prime number of a 5-bit input. Write the structural VHDL program for the design.
b) Realize the following expression using **74X151 IC**.
$f(X) = \overline{A}BC + A\overline{B}C + AB\overline{C}$

8. a) What is meant by programmable logic device? Draw and explain the block diagrams of different PLDs.
b) Design and draw the circuit diagram of decade counter and develop the VHDL source code for the same.

CODE No.:10BT50423

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2015

PRINCIPLES OF COMMUNICATIONS

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Find the convolution of two signals $\mathbf{x(t) = e^{-2t}u(t)}$ and $\mathbf{h(t) = u(t)}$.
b) Find the Fourier Transform of
i) cos $\omega_o t$ ii) Gate function

2. a) Explain the frequency domain description of AM wave.
b) Explain about coherent detector and DSB-SC.

3. a) Explain the indirect method of generation of FM wave.
b) Explain about the demodulation of FM wave using zero crossing detector.

4. a) Differentiate between PAM, PWM and PPM.
b) Explain the generation of PPM with neat sketches.

5. a) What is Delta modulation and compare it with PCM?
b) Explain with neat block diagram Adaptive Delta Modulator Transmitter and Receiver.

6. a) Draw the block diagram of FSK transmitter and explain the working principle.
b) Write the differences between coherent and non coherent systems. Give examples.

7. a) Consider a telegraph source having two symbols, dot and dash. The dot duration is 0.2s. The dash duration is 3 times the dot duration. The probability of the dot's occurring is twice that of the dash, and the time between symbols is 0.2s. Calculate the information rate of the telegraph source.
b) What is the significance of coding? Explain the principles of any one type of source code.

8. a) Write short notes on linear block codes.
b) Consider the (7, 4) hamming code defined by the generator polynomial $\mathbf{g(x)=1+x+x^3}$. The code word 0111001 is sent over a noisy channel providing the received word 0101001 that has a single error. Determine the syndrome polynomial S(x) for this received word and show that it is identical to the error polynomial e(x).

CODE No.:10BT50501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

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) Show that In order and Post order sequences of a binary tree uniquely define the binary tree.
b) Discuss Bi-connected Components with an example.

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. a) Explain the following terms:
i) Feasible solution.
ii) Optimal solution.
iii) Objective function.
b) Write procedure for Greedy Knapsack (P,W,M,X,N) where P and W contains profits and weights, M is Knapsack size and X is the solution vector.

5. a) Explain the commonly used designing steps for dynamic programming algorithm.
b) Find optimal solution for 0/1 Knapsack problem (w1,w2,w3,w4) = (10,15,6,9), (p1, p2, p3, p4) = (2,5,8,1) and m=30 using dynamic programming.

6. a) Explain 0/1 knapsack problem.
b) Solve the 4-queens problem using backtracking.

7. a) Explain the LC Branch and Bound solutions.
b) Write the difference between LIFO and FIFO Branch and Bound.

8. a) Write a short note on NP problems.
b) Explain the Cook's theorem.

CODE No.:10BT50502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

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) Explain the programming model of 8085 with an example.
b) How and what directives are used to define Macro? What is the difference between a macro and a subroutine?

2. a) What are the LOOP instructions of 8086? Explain the use of DF flag in the execution of string instructions.
b) Distinguish between packed BCD and unpacked BCD. Develop an assembly language program to multiply two BCD numbers of 2-digits each.

3. a) Interface eight 8K chips of RAM and four 8K chips of EPROM with 8086. Interface the RAM bank at a segment address 0B00H and the EPROM bank at a physical address F8000H.
b) Discuss the priorities of DMA request input of 8257.

4. a) List the major components of the 8279 keyboard / display interface and explain their functions.
b) Interface an DAC AD7523with an 8086 CPU running at 8 MHz and write an ALP to generate a saw tooth waveform of period 1msec with V_{max}= 5V.

5. a) What is the difference between maskable and non -maskable interrupts? Give some examples.
b) List the major components of the 8259 interrupt controller and explain their functions.

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.

CODE No.:10BT50503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

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) Which of the following plays an important role in representing information about the real world in a database? Explain briefly.
   i) The data definition language
   ii) The data manipulation language
   iii) The buffer manager
   iv) The data model
   b) Explain the difference between logical, conceptual and physical data independence.

2. a) Design an ER diagram for an software training group database that will meet the information needs for its training program. Clearly indicate the entities, relationships and the key constraints. The description of the environment is as follows:
   The company has 14 instructors and can handle up to 120 trainees for each training session. The company offers 4 advanced technology courses, each of which is taught by a team of 2 or more instructors. Each instructor is assigned to a maximum of two teaching teams or may be assigned to do research. Each trainee undertakes one advanced technology course per training session.
   b) Explain the conceptual design for large enterprises.

3. Consider the following database.
Employee (employee-name, street, city)
Works (employee-name, company-name, salary)
Company (company-name, city)
Manager (employee-name, manager-name)
Give an expression in the relational algebra, the tuple relational calculus, and the domain relational calculus, for the following queries.
   i) Find the names of all employees who work for estate bank.
   ii) Find the names of managers who are also employees.

4. a) Explain different Binary Operations.
   b) For the following relational database, give the expressions in SQL.
   branch schema (branch name, branch city, assets)
   customer schema (customer name, cus-tomer street, customer city)
   Loan schema (branch name, loan number, amount)
   Borrower schema (customer name, Loan number)
   Account schema (branchname, account number, balance)
   Depositor schema(Customer name, account number)
   i) Find the names of all customers whos street address include substring 'Main'
   ii) Find average balance for each customer who lives in Harrison and at least three accounts.
   iii) Find all customers who have a loan at bank whose names are neither Smith nor Jones.

5. a) Explain the Boyce- Codd normal form with an example.
b) Describe the various properties of decompositions.

6. a) How can you implement atomicity in transactions? Explain.
b) Explain in detail about concurrent executions.

7. a) What does the lock manager do? Describe the lock table and transaction table data structures and their role in lock management.
b) Explain how timestamps assigned at startup in a timestamp-based concurrency control ensure serializability.

8. a) i) What is meant by stripping?
ii) What are the advantages of RAID?
iii) Explain the mirroring in RAID levels
b) Explain the difference between each of the following.
i) Primary versus secondary indexes
ii) Clustered versus unclustered indexes

CODE No.:10BT50504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

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. Explain the following in detail:
a) Multiprogramming
b) Multitasking
c) Multiprocessing

2. Explain any two job scheduling algorithms in detail and compare them with an example.

3. Explain the following in detail:
a) Process synchronization
b) Readers and writers problem.

4. a) What is the difference among the deadlock avoidance, prevention and detection?
b) Discuss mutual exclusion and hold and wait conditions in context to deadlock prevention.

5. a) What do you mean by address binding?
b) Differentiate logical address and physical address.
c) Describe first fit, best fit and worse fit strategies in terms of memory allocation scheme. Explain their advantages and disadvantages.

6. Given memory partitions of 100KB, 500KB, 200KB, 300KB, and 600 KB in order how would each of the first-fit, best-fit and worst-fit algorithms place processes of 212KB, 417 KB, 112 KB and 426 KB in order. Which algorithm makes the most efficient use of memory?

7. a) What is a stable storage? How is that implemented?
b) Discuss any three disk scheduling algorithms in brief.

8. a) How can the access control rights among users implemented?
b) What is cryptography?
c) Explain its role as an effective security tool.

CODE No.:10BT51001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

PROCESS CONTROL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss in detail about characteristics of a thermal system.
b) Distinguish between batch and continuous process with a suitable example.

2. a) Explain in detail about single speed floating control with suitable example.
b) Discuss about two-position control with example. Why differential gap is used in the system.

3. a) A liquid level system converts a 4 - 10 m level into a 0.4 to 2.0 V. Design a P + Reset controller that outputs 0 - 5 V with a 50 % PB, 0.03 min reset time, and 0.05 min derivative time. Fastest expected change time is 0.8 min.
b) Explain pneumatic force type proportional controller.

4. a) What is meant by process tuning and list the various methods of tuning of PID parameters.
b) Discuss process reaction method for control loop tuning.

5. a) Explain pressure to current converter with a neat diagram.
b) Discuss about any one type of hydraulic actuator with neat diagram.

6. Write short notes on:
i) Sliding stem Valves.
ii) Rotating shaft Valves.

7. a) Compare the feed forward and feedback controllers.
b) Explain in detail about split range control with a suitable example.

8. a) Write short notes on heat exchanger.
b) Explain a control scheme of binary distillation column.

CODE No.:10BT51002

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

INDUSTRIAL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain, how the displacement is measured through digital transducers.
b) With a suitable example, explain the measurement of diameter.

2. a) Explain the principle, operation and application of LVDT.
b) Explain the principle and operation of Tachogenerators and Stroboscope.

3. a) With a neat sketch, explain the McLeod gauge based measurement.
b) Discuss the working of Dead weight gauge.

4. a) Discuss the laser Doppler velocimeter based flow measurement.
b) Explain the concept of variable area meters used for flow measurement.

5. a) Explain the principle and operation of Saybolt Viscometer and list their applications.
b) Explain the principle and working of Gamma ray and vibrating probe method.

6. a) Design a ON-OFF controller for temperature range of 30^{o}C-150^{o}C.
Assume current through RTD as 25 mA. Bridge is balanced at 30^{o}C.
b) Explain the principle, operation and application of Optical Pyrometers.

7. a) Discuss in detail about measurement of Level by Ultrasonic method.
b) Write short notes on torque tube and bubbler tube.

8. a) Explain the principle and operation of Hair Hygrometer for measuring humidity and Variable reluctance type accelerometer.
b) Explain the principle, operation and application of Gyroscope.

CODE No.:10BT51201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

SOFTWARE ENGINEERING

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) List out the principles that guide framework activity.
b) What are different software myths and how they are clarified? Explain.

2. a) Explain the steps involved in Waterfall model.
b) Explain in brief Boehm's Spiral model.

3. a) Explain about Behavioural model.
b) Explain the classification of Volatile requirements.

4. a) Discuss about basic issues in design.
b) Discuss different types of architectural styles.

5. Draw three flow graphs that have equal cyclomatic number but which seem intuitively to rank differently in terms of structural complexity. What actual structural attributes are contributing to "complexity" in your examples? Find hierarchical measures that capture these attributes.

6. a) Explain about black-box testing.
b) Write short notes on Measures, Metrics and Indicators.

7. a) The Capability maturity model is used by many companies as an incentive to implement new practices. That is, organizations set goals and reward behaviour to help them move up from level 1 toward level 5. What kinds of measurable goals can be set for each of the process areas? How can those measures be used to track progress toward level 5.
b) Assume that there is a 40 % defects found in the logic while implementing the software project. So explain how way the fish bone diagram is used in diagnosing the data given above.

8. a) Explain CMMI in brief.
b) Discuss about Software Reliability and Availability.

CODE No.:10BT51202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

COMPUTER GRAPHICS

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) List the different types of graphic software.
b) Give the classifications available in the graphics software. Explain.

2. a) Generate all raster points on the line segments , if the two end-points are given as (20, 30) and (60, 70) using Bresenhams line drawing algorithm.
b) Explain the boundary-fill and polygon-fill algorithms.

3. a) Portray the threshold selection methods in image segmentation in computer graphics.
b) Write in detail, how to generate three dimensional curved lines and surfaces with required figures.

4. a) What is the principle of Cyrus-Beck algorithm?
b) With an example, explain Cohen-Sutherland line clipping algorithm.

5. a) Describe the depth buffer algorithm for removing hidden surfaces.
b) Distinguish between flat shading and smooth shading. Explain the two meshes rendered using flat shading.

6. a) Describe the properties of meshes used in solid modeling.
b) Derive the transformation matrix for rotation about an arbitrary axis in 3D domain.

7. a) Given a clipping window P(0, 0), Q(30, 0), R(30, 20), S(0, 20) apply Sutherland-Cohen algorithm to determine the visible portion of the line A(10, 30) and B(40, 0).
b) Acquire a transformation matrix for translating a point by tx = -1, ty = 2. Determine the matrix of the inverse operation.

8. a) Explain linear list notations of animation languages.
b) Write short note on JPEG image compression standard.

CODE No.:10BT51302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Supplementary Examinations November - 2015

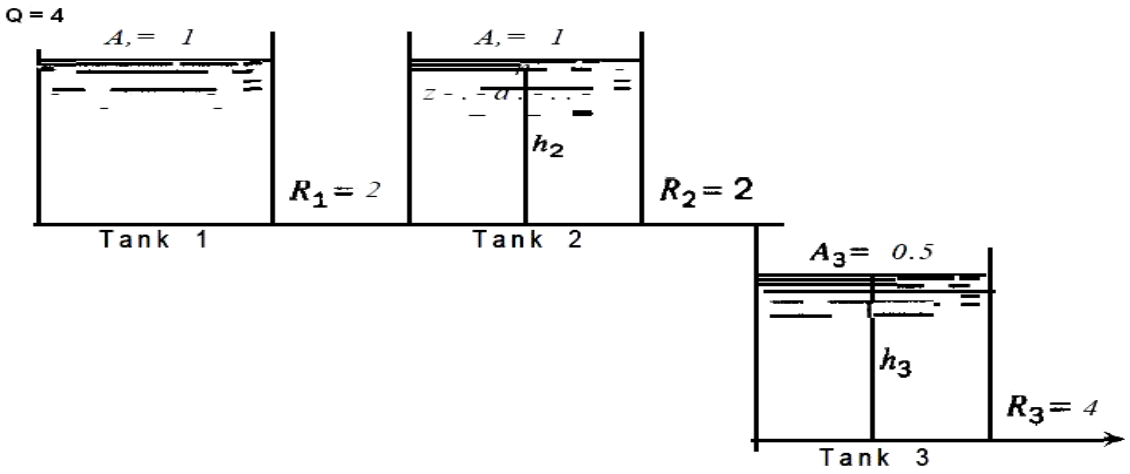
PROCESS CONTROL

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain continuous process with an example.
b) Obtain mathematical model of given system.
For a step change in Q (ie. Q = 1/S), determine $H_3(0)$, $H_3(\infty)$ and plot $H_3(t)$.



2. a) Briefly explain the discontinuous control mode with a suitable example.
b) Define tuning of a controller. Discuss in detail about Cohen-Coon tuning method.

3. a) What are the different flow measuring elements? Explain.
b) Derive the response of second order instrument for step input.

4. a) Explain the hydraulic integral and proportional controllers.
b) Compare displacement and force type pneumatic controllers.

5. Explain about:
a) Electro pneumatic actuators.
b) Electric motor actuators.

6. Discuss the following in detail:
a) Steam plant control system.
b) Heat exchange without phase change.

7. a) Write short notes on stability of exothermic reactors.
b) Explain the principles of governing the conduct of chemical reactions.

8. a) Explain the role of advanced control techniques in a Continuous stirred tank reactor (Chemical Plant).
b) Explain the role of instrumentation and control in nuclear power plants.

CODE No.:10BT51501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

SYSTEM SOFTWARE

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain different addressing modes with example.

2. a) Discuss in detail about Loop instruction in assembly language with an example.
b) Discuss in detail about various shifting and rotating instruction in assembly language with an example.

3. Discuss in detail about BIOSINT 21H different functions for keyboard processing.

4. a) Define types of parameter and explain the parameter passing methods.
b) Analyze the given code.

```
MACRO
        SUM1, &X
        LDA 1, &X
       STA 1, &X
        MEND
MACRO
      SUM &X, &Y, &Z
      SUM1 &X
      STORE &Y
      SUM 1 &Z
      MEND
      ________

      ______

     SUM D1, D2, D3
```

Expand the macro; create macro name table and macro definition table.

5. a) Explain the data structure used by Macro Processor.
b) Describe in brief about generation of unique labels in macro processors.

6. Design an ASSEMBLER for a hypothetical assembly language using single pass assembler. Assume suitable data.

7. a) Describe machine dependent loader features in detail.
b) Explain the following in detail:
i) Linkage Editor ii) Dynamic Linking iii) Bootstrap Loaders.

8. What do you mean by system programming? Explain different type system software in brief.

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CODE No.:10BT51502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

OBJECT ORIENTED SOFTWARE 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 waterfall model and compare it with spiral model.
b) Explain a software engineering is a layered technology.

2. a) Describe the COCOMO models.
b) List the principal tasks of software project managers.

3. a) List various diagrams that the UML contains. Explain any four of them briefly.
b) Draw the sequence diagram for library management system.

4. a) What is viewpoint? Discuss the statement "Different viewpoints on a problem are essential".
b) Write briefly a note on Class Based Modeling.

5. a) What is abstraction? Explain different types of abstractions with examples.
b) Write briefly on Design Evolution.

6. a) Describe the 7 modeling steps of COCOMO II Modeling Methodology.
b) Write a note on "Art of Debugging".

7. a) Explain with example LOC based estimation.
b) What is Capability Maturity Model? Describe the various levels in CMM with the help of a diagram.

8. a) Discuss in detail about Formal Technical Reviews (FTR).
b) What is meant by SQA? Discuss in detail SQA activities.

CODE No.:10BT60501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

THEORY OF COMPUTATION

[Computer Science and Systems Engineering]

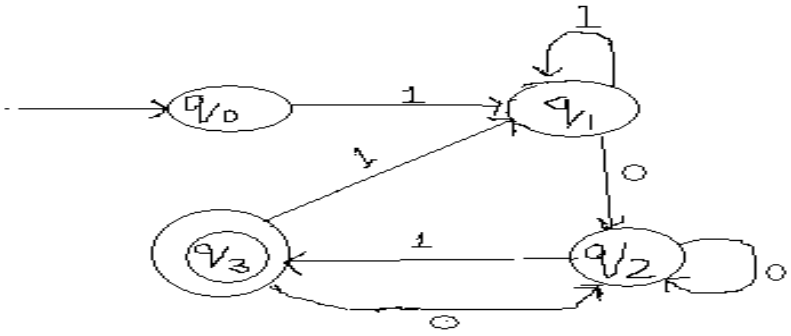
Time: 3 hours **Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. a) Design DFA which accepts string 1100 only.
b) Design a DFA which accepts set of all strings contains 1100 as substring, where ∑ = {0, 1}

2. a) Give Mealy machine for input from (0+1)*, if the input ends in 101, output A; if the input ends in 110, output B; otherwise output C;
b) Check whether the following languages are regular or not;
i) **L = {WW^R | W is a string of binary numbers}** ii) **L = {a^{2i} | i ≥ 0}**

3. a) Find the regular expression corresponding to the automaton given.



b) Write the *closure* properties of regular sets.

4. a) Define a grammar? What is an ambiguous grammar? Explain with an example.
b) Write the procedure for converting regular grammar to finite automaton.

5. a) Show that **L={a " b " c " / n>=1}** is not context-free.
b) What is Normal form and explain the widely useful Normal forms of CFG.

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) If L is CFL, then we construct a PDA A accepting L by stack, i.e. L = N(A).
b) Define pushdown automata with example.

8. a) What are LR (K) Grammar. Check whether the following Grammar is LR (0) or not
S → (A)
S → *a*
A → SA
A → ε
b) What is a Universal Turing Machine?

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CODE No.:10BT61202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

COMPUTER NETWORKS

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain TCP/IP Model in detail.

2. Explain about Unguided media.

3. Discuss in detail about HDCL.

4. Differentiate Pure ALOHA and Slotted ALOHA with efficiency calculations.

5. a) Differentiate between Broadcast and Multicast.
b) Write short notes on IPV6.

6. Explain Congestion Control Strategy in TCP.

7. Explain about Electronic Mail.

8. a) What is the need for Bluetooth?
b) Explain transposition cipher with the help of example.

CODE No.:10BT4EC01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2016

OPTIMIZATION TECHNIQUES

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Define optimization. Write engineering applications of optimization.

2. Use the method of Lagrangian multipliers to solve the following NLP. Does the solution maximize or minimize the objective function.
Optimize $\mathbf{Z= 2X_1^2+X^2_2+3X_3^2+10\ X_1+8X_2+6X_3\ -100}$
Subject to $\mathbf{X_1+X_2+X_3=20,\quad X_1, X_2, X_3 \geq 0}$

3. Use two-phase simplex method to solve
Minimize $z = 15/2\ x_1 - 3x_2$
subject to constraints $3x_1 - x_2 - x_3 \geq 3$
$x_1 - x_2 + x_3 \geq 2$
$x_1, x_2, x_3 \geq 0.$

4. Solve the following Linear programming problem using the branch and bound method.
Maximize $f(x) = 3x_1 + 4x_2$
Subject to $\mathbf{7x_1 + 11x_2 \leq 88,}$
$\mathbf{3x_1 - x_2 \leq 12,}$
$\mathbf{x_1, x_2 \geq 0,}$ $\mathbf{x_1, x_2}$ are integers.

5. Find the value of x in the interval (0,1) which minimizes the function $f = x(x - 1.5)$ to within $\pm$ **0.05** by Fibonacci method.

6. Minimize $f(x_1, x_2) = x_1 - x_2 + 2x_1^2 + 2x_1x_2 + x_2^2$ with the starting point (0, 0). Using Univariate method. Perform three iterations.

7. Using Exterior penalty function method, solve
Minimize: $f(x_1, x_2) = \frac{1}{3}(x_1 + 1)^3 + x_2$
Subject to constraints $g_1(x_1, x_2) = 1 - x_1 \leq 0 \quad g_2(x_1, x_2) = -x_2 \leq 0$

8. Solve the following LP problem by dynamic programming.
Maximize $\mathbf{f(x_1,x_2) = 10x_1 + 8x_2}$
Subject to
$\mathbf{2x_1 + x_2 \leq 25}$
$\mathbf{3x_1 + 2x_2 \leq 45}$
$\mathbf{x_2 \leq 10}$
$\mathbf{x_1 \geq 0, x_2 \geq 0}$

CODE No.:10BT4HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2016

MANAGERIAL ECONOMICS AND PRINCIPLES OF ACCOUNTANCY

[Electrical and Electronics 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. What is elasticity of demand? Explain the factors governing elasticity of demand.

2. Define production function. Explain internal and external economies of scale.

3. Define market. Explain any four methods of pricing, based on strategy.

4. Explain the features of a partnership. How can it overcome the limitations of Sole trader form of business organization?

5. Define 'Accounting'. Explain its concepts and conventions.

6. The following is the Trial balance of Ajanta & Co as on 31.12.2012. Prepare Profit and Loss account for the year ended 31.12.2012 and Balance sheet as on 31.12.2012.

Particulars	**Debit Rs.**	**Credit Rs.**
Stock 1.1.2012	80,000	
Insurance	800	
Purchase and Sales	1,76,000	3,24,000
Rent and Rates	1,600	
Wages	24,600	
Outstanding wages		400
Debtors and creditors	41,000	52,000
Carriage inward	3,000	
Returns	4,000	6,000
Discounts	1,200	
Printing and Stationery	2,400	
Bills receivable	6,000	
Bank overdraft		14,400
Furniture	18,800	
Cash at Bank	9,600	
Cash in hand	740	
Interest received		6,280
Plant and machinery	1,40,000	
General expenses	1,340	
Capital		1,08,000
Total	**5,11,080**	**5,11,080**

Note: Closing Stock on 31.12.2012 is Rs.41,000

7. A business firm of three project proposals of A, B and C of initial investments cost is Rs.10,00,000 of all projects. From the following information, which Project do you select for the using of a) payback method and b) NPV method at 10% discount rate.

Year	1	2	3	4
Project A	5,00,000	5,00,000	2,00,000	-
Project B	6,00,000	2,00,000	2,00,000	-
Project C	2,00,000	2,00,000	6,00,000	4,00,000

8. Explain the important features of Tally and how to use tally in business operations.

CODE No.:10BT6HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2016

MANAGEMENT SCIENCE

[Electronics and Communication Engineering, Bio-Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. List and discuss the contributions of Henry Fayol.

2. What are the causes of conflict between line and staff? What can be done to develop line and staff members into integrated team?

3. a) Distinguish between product layout and process layout
b) Distinguish between job order production and mass production

4. Ram industry needs 5400 units/year of a bought out component which will be used in its main product. The ordering cost is Rs.250 per order and the carrying cost per unit per year is Rs.30.
Find i) Economic order quantity.
ii) No. of orders per year.
iii) Time between successive orders.

5. What is human resource management? What is the role of a personnel manager in an organization describing the duties and functions?

6. A small project is composed of time activities whose time estimates are given below:

Activity	A	B	C	D	E	F	G	H	I
Optimistic time	2	2	4	2	2	3	2	5	3
Most likely time	2	5	4	2	5	6	5	8	6
Pessimistic time	8	8	10	2	14	15	8	11	15

Activities A, B and C can start simultaneously. Activity D follows activity A while E follows B. Activities D and E are followed by activity G while F is dependent on C, H depends D and E while I defends on F and G.
i) Draw the net work.
ii) What is the expected project duration?
iii) If the project due date is 28 days, what is the probability of not meeting the due date?

7. a) Who is an entrepreneur? Explain characteristics and qualities of an entrepreneur.
b) Explain the need to develop entrepreneurs.

8. What is ERP? List and explain the modules of ERP.

CODE No.:10BT40503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2016

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 influences on Language design?
b) Explain the different concepts of programming languages.

2. a) Define Union, Free Union and Discriminated Union.
b) Suppose that a language includes user defined enumeration type and that the enumeration values could be overloaded, that is the same literal value could appear in two different enumeration type, as in the following:

```
type
 colors =(red, blue, green);
 mood =(happy, angry, blue);
```

Use of the constant 'blue' cannot be type-checked. Propose a method of allowing such type checking without completely disallowing such over-loading.
c) Write and analyze a comparison of C's **malloc** and free functions with C++'s new and delete operators. Use safety as the primary consideration in the comparison.

3. a) Consider the following C program:

```
int fun(int *i) {
*i += 5;
return 4; }
void main()
{
 int x = 3;
 x = x + fun(&x);
}
```

What is the value of x after the assignment statement in main, assuming
i) Operands are evaluated left to right.
ii) Operands are evaluated right to left.
b) Explain counter controlled loops. What are the design issues for counter-controlled loop statements?

4. a) Define shallow and deep binding for referencing environments of sub -programs that have been passed as parameters.
b) What are the arguments for and against a user program building additional definitions for existing operators, as can be done in C++? Such user-defined operator overloading is good or bad? Support your answer.

5. a) Define strong typing. Discuss how type checking is enforced in Ada, C, C++ and Java. What do you mean by coercion, how does it affect strongly typed languages?
b) Write a LISP program to find the factorial of a given number.

6. a) What is Exception? Explain the exception handling in Ada & C++.
b) Describe the basic elements of Prolog.

7. a) What is meant by overloading? What are the different types? Explain.
b) What are different methods for semantic description? Explain.

8. a) List and explain the difference between procedure oriented and object oriented programming languages.
b) What is the difference between syntax analysis and semantic analysis? Explain with examples.

CODE No.:10BT50422

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2016

LINEAR AND DIGITAL IC APPLICATIONS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) List out the AC characteristics of an op-amp and discuss about them.
b) With neat circuit diagrams, explain the techniques used for minimizing offset voltage and offset current.

2. a) Draw the circuit and explain the working of
i) Voltage to current converter ii) Current to voltage converter.
b) Design an inverting amplifier with an input resistance of 10 kΩ and gain of -5.

3. a) With a suitable circuit diagram using NE 565 PLL IC, explain implementation of a FSK demodulation.
b) Calculate the frequency of oscillation of a 566 VCO IC for the external component values R_T = 6.8K and C_T = 470PF. Assume other component values if necessary

4. a) With neat sketches explain the following:
i) Propagation delay ii) Power consumption iii) DC noise margin
b) Explain how CMOS device is destroyed.

5. a) Compare TTL, CMOS and ECL families.
b) Why IC industry is moving towards lower power supply voltage? Write a short note on diode logic.

6. a) Explain process statement in VHDL with example.
b) What do you mean by System library and User library?

7. a) Write down the VHDL code for ALU and describe its working.
Briefly explain the function of control unit.
b) Describe the operation of 1 to 8 Demux and realize it using VHDL.

8. a) Draw the logic diagram of 74 X 163 binary counter and explain its operation.
b) Design a conversion circuit to convert a T flip-flop from J-K flip-flop.

CODE No.:10BT50423

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2016

PRINCIPLES OF COMMUNICATIONS

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Find the Fourier transform of a signal $e^{-at}\,u(t)$ and draw its amplitude and phase spectra.
b) Given a discrete signal $x[n] = \{1,1,1,-1,-1,1,-1\}$, prove its auto-correlation function is an even function. Plot the function $R_{xx}(\tau)$ with respect to time lag τ which is equal to the sampling time.

2. a) Explain the square-law diode modulation method for AM generation.
b) In an AM systems, the modulating signal is sinusoidal with frequency f_m Hz. If 80% modulation is used, then find the ratio of total side-band power in the modulation signal, to the total power.

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 Sampling? Explain the different types of Sampling.
b) With a neat block diagram, explain the Time Division Multiplexing.

5. a) Describe the operation of delta modulation with suitable block/circuit diagram.
b) A voice frequency signal band-limited to 3 kHz is transmitted with the use of delta modulation system. The pulse repetition frequency is 30 k pulses per second and the step size is 40 mV. Determine the maximum permissible speech signal amplitude to avoid a slope overload.

6. a) What do you mean by coherent and non-coherent detection? Discuss them with suitable examples.
b) Sketch the binary FSK, BPSK and QPSK waveforms for the input data sequence of 11100101.

7. a) Find the channel capacity for a binary symmetric channel having two binary symbols.
b) A discrete source emits one of five symbols once every milliseconds with probabilities 1/2, 1/4, 1/8, 1/16 and 1/16 respectively. Determine the source entropy and Information rate.

8. Write the following:
i) Convolutional codes.
ii) Single error detection methods.

CODE No.:10BT50501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2016

DESIGN AND ANALYSIS OF ALGORITHMS

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Write the code for Quick Sort. Explain the working with an example.
b) Distinguish between Big Oh and Big Omega notation.

2. a) Explain in detail about weighted union and collapsing find algorithms with suitable examples.
b) Give a short note on biconnected components.

3. a) Write and explain control abstraction for divide and conquer strategy.
b) Calculate Worst case and Best case complexities of quick sort.

4. a) What is dynamic programming? Explain with an example.
b) Write the program for Merge Sort.

5. a) Explain the method of solving the knapsack problem using dynamic programming approach. Solve the knapsack problem with n = 3, m = 20, (p1,p2,p3) = (25,24,15) and (w1,w2,w3) = (18,15,10).
b) Distinguish between Greedy method *Vs* Dynamic programming.

6. a) Explain the difference between General Backtracking algorithm and Recursive Backtracking algorithm.
b) What is Graph coloring problem? Explain how it is solved by Backtracking technique.

7. a) Explain the following:
i) bounding ii) control abstraction for LC-Search
b) Consider the traveling salesperson instance defined by the cost matrix:

$$\begin{bmatrix} \infty & 7 & 3 & 12 & 8 \\ 3 & \infty & 6 & 14 & 9 \\ 5 & 8 & \infty & 6 & 18 \\ 9 & 3 & 5 & \infty & 11 \\ 18 & 14 & 9 & 8 & \infty \end{bmatrix}$$

Obtain the Reduced Cost matrix and find out total reduced cost.
c) Compare Dynamic programming, Backtracking and Branch & Bound Techniques.

8. a) State and prove Cook's Theorem.
b) Prove that Clique is NP - hard.

CODE No.:10BT51202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2016

COMPUTER GRAPHICS

[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 two basic techniques for producing color display with a CRT?
b) Consider a raster system with the resolution of 1024 x 768 pixels and the color palette calls for 65,536 colors. What is the minimum amount of video RAM that the computer must have to support the above-mentioned resolution and number of colors?

2. a) Write a procedure to perform a solid-fill scan conversion for an input set of polygon vertices.
b) Devise a midpoint algorithm to display an ellipse with input parameters Rx, Ry, xCenter and yCenter.

3. a) Write a note on Window-to-Viewport Transformation.
b) Determine sequence of basic transformations that are equivalent to the rotation of a point (x, y) around (1, 3).

4. a) What do you mean by clipping? Discuss in detail about polygon clipping in 2D.
b) Explain detail about windows and view ports.

5. a) How are periodic B-Spline curves different from non-periodic B-Spline curves?
b) Explain the importance of B-Spline curves in geometric modeling.

6. a) Give the 3D homogeneous coordinate transformation that rotates a point about the line

$x(t) = 0$
$y(t) = t$
$z(t) = t$

by degrees. Leave matrices in factored form. (Hint: draw a picture of the line)
b) The following questions refer to the projection of 3D points onto the view plane given by x = -10. Assume that the up vector is (0, 1, 0).Given an arbitrary point (x, y, z), what is the corresponding 2D projected point on the view plane using a parallel projection (the direction of projection is (1,0,0))?

7. a) Discuss the techniques for efficient Visible Surface algorithm with suitable example.
b) Briefly explain Depth sorting in Visible Surface detection.

8. a) List and explain methods of controlling animation.
b) How would you create a Weiman-style translation algorithm? Suppose a pixmap has alternating columns of black and white pixels. What are the results of translating this pixmap by ½ pixel? What is the result of applying Weiman's scaling algorithm to stretch this image by a factor of 2? What do you think of these results?

CODE No.:10BT60101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2016

ESTIMATION AND QUANTITY SURVEYING

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the detailed specifications for the following.
i) Lime concrete ii) Steel reinforcement iii) Brick work
b) List out the factors to be considered during the preparation of a detailed estimate.

2. Prepare a detailed estimate of single room building having a front verandah from given plan, elevation and sectional drawings as shown in Fig.1
i) Earth work in excavation in foundation.
ii) 2 cm DPC of 1:2 cement mortar with water proofing materials.
iii) 7.5 cm thick lime concrete in roof terracing.
iv) 2.5 cm thick CC (1:2:4) floor over and including 7.5cm lime concrete.

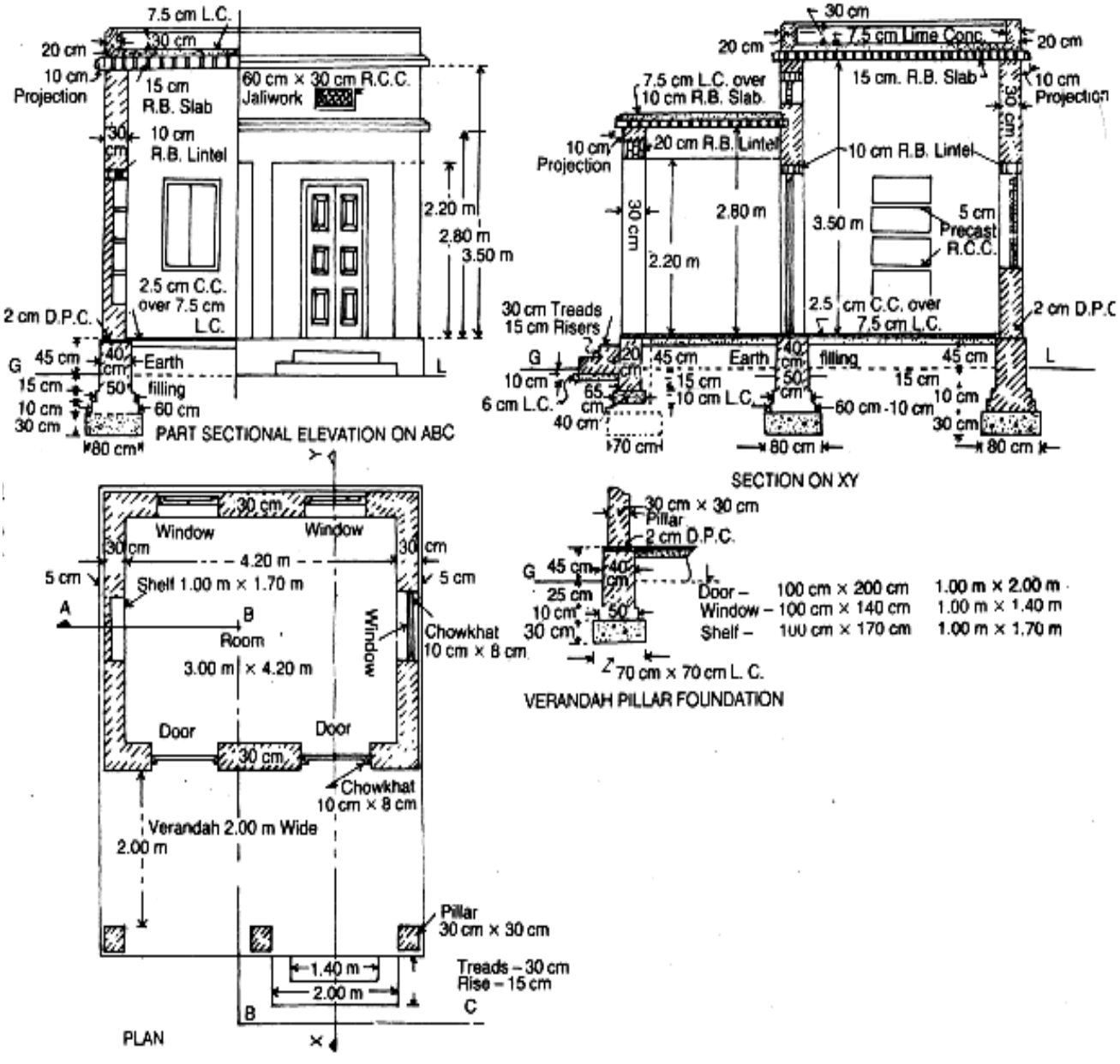

Fig.1

3. A canal with side slopes 1.5:1 and bed width 3.5 m with water depth of 0.6 m is carried in full embankment. The side slopes of the embankment are 1.5:1 on both sides and the bank widths are 3.3 m and 1.8 m on the left and right sides respectively. The G.L. for a length of 600 m are tabulated below. The canal bed level at chainage of 1000 m is 208.900 m and bed slope of canal is 1 in 5000. Estimate the quantity of earth work in embankment, Take free board of canal as 0.45 m.

Chain age(m)	1000	1100	1200	1300	1400	1500	1600
RL of ground	208.9	208.75	208.6	208.5	208.5	208.4	208.35

4. Evaluate the cost of the following items of work.
i) C.R. Masonry in CM (1:5) for 1.00 cum.
ii) I class brick work in CM (1:5) for foundation and plinth for 1.00 cum.
iii) 20 mm thick plastering in CM (1:4) for walls for 10.00 sqm.

5. Given a column and its footing as shown in Fig.2. Work out the quantity of steel in footing and column only.

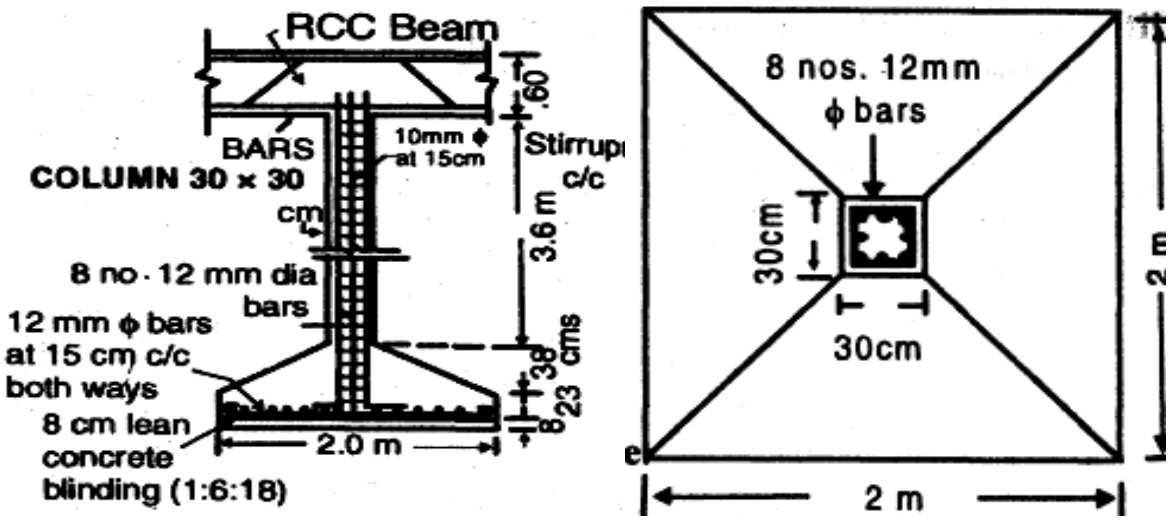

Fig.2

6. a) Define contract. Explain briefly the requirements of contract.
b) What is tender? Explain briefly the principles of tendering.

7. a) Differentiate between the following.
i) Salvage value and Scrap value.
ii) Free hold and Lease hold properties.
b) A building constructed on a site measuring 20m x 30m is fetching a gross rent of Rs. 2,500/-per month. The plinth area of the building is 140 Sq.m. and the cost of construction is Rs. 2,000/-per Sq.m. of plinth area. The estimate life of the building is 70 years. Determine the present value of the property based on rental income assuming a net yield of 9% for sinking fund accumulation, a compound interest of 5% may be assumed. Taxes, annual repairs and all other outgoings may be taken as 32% of the gross income and the cost of land as Rs. 80/-per Sq.m.

8. a) Differentiate the general specifications of First class and Second class Building.
b) Explain in detailed specification of Plastering with cement mortar and lime mortar.

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CODE No.:10BT60102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2016

STEEL STRUCTURES - I

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Classify the steel structural members based on the load transfer.
b) Briefly explain the possible limit states that are considered in the limit state method of design of steel structures.

2. a) What are the advantages of High Strength Friction Grip bolts?
b) A groove weld is to connect two plates 180 mm × 18 mm each. Determine the design bending strength of the joint, if it is subjected to a moment of 10 kN.m. Also, determine the adequacy of the joint if the shear force at the joint is 280 kN. Assume the welds to be of double-U shop welded. The grade of steel is Fe 410.

3. a) What are the advantages of 'welded connections' over 'bolted connections'?
b) A bracket plate of thickness 12 mm is welded (3 sides welded) to the flange of a column ISHB 300 @ 577 N/m to support a load of 260 kN as shown in the Fig.1. Determine the size of the weld required.

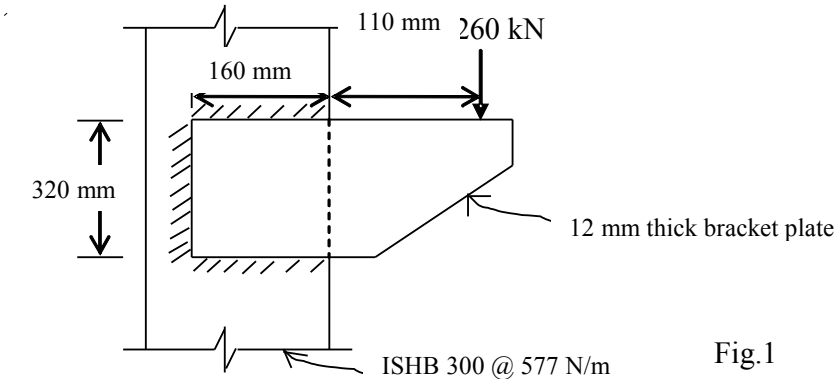

Fig.1

4. a) What is a lug angle and explain why is it not preferred?
b) Design a single angle tension member to carry a design tensile load of 450 kN. Use a 10 mm thick gusset plate. Adopt 20 mm diameter black bolts for connection.

5. A simply supported beam of span 8 m has to carry a uniformly distributed load of 40 kN/m inclusive of self weight. Design a suitable section of the beam when the compression flange is laterally supported.

6. A steel column 8 m long carries an axial load of 600 kN. Design the column if the column is hinged at both ends. Assume Fe 410 grade steel.

7. Calculate the design strength of a built up compression member consisting of ISHB 300 with cover plates 325 mm **x** 16 mm on each flange. The length of the column is 6 m. Assume the bottom of column is fixed and top is pinned.

8. a) Calculate the compressive strength of a compound column made up of ISMB 400 @ 616 N/m with two cover plates of size 300 × 20 mm, one on each side of the flanges of the column. Effective length of the compound column is 5 m. Ends of the column are fixed at one end and hinged at the other.
b) Design a slab base for a column ISHB 300 @577 N/m carrying an axial load of 1200 kN. Use M25 concrete and welded connection between column and base plate.

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CODE No.:10BT60103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2016

WATER RESOURCES ENGINEERING

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) i) What are the benefits that can be occurred from Irrigation projects ?
ii) What is flood Irrigation? Where is it practiced?
b) Explain methods of improving soil fertility.

2. a) Explain the terms duty and delta. Derive a relationship between the two for a given base period.
b) Explain with a neat sketch, how the frequency of irrigation is determined.

3. a) Explain silt excluder and silt ejector with neat sketches.
b) Explain the use of Khosla's formulae for computing key point pressures and exit gradient.

4. a) What do you understand by demand curve? Explain the method of calculating reservoir capacity for a specified yield, from the mass inflow curve.
b) Discuss in brief merits and demerits of various types of dams.

5. a) Differentiate between:
i) Low gravity dam and high gravity dam.
ii) Elementary profile and practical profile.
b) What are the modes of failure and criteria for stability requirements for a gravity dam?

6. a) Differentiate between horizontal and vertical piping in earth dams. Suggest permanent remedial measures to check vertical piping.
b) Illustrate with reasons, a typical cross-section of an earthen dam to be adopted where fine grained weak soil is available for embankment and unconsolidated impervious silty clay as foundation. Explain the basic components of the same.

7. a) What is a fall in a canal? How do you select its location?
b) What are the different types of outlets?

8. a) Discuss in detail, different types of cross drainage works with the help of neat sketches.
b) Explain Mitras design of hyperbolic transition, when depth of water remains constant.

CODE No.:10BT60104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2016

ENVIRONMENTAL ENGINEERING - I

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Enumerate various components of water supply scheme and explain briefly.
b) Draw a flow diagram indicating various components in a water supply scheme and explain the objectives of each component.

2. a) Enumerate various sources of water. Discuss and compare the quality and quantity of the sources.
b) Explain the different factors that affect the water demand of domestic use.

3. a) Discuss in detail, the various aspects to be considered while contemplating a water supply scheme to a city.
b) What do you mean by fire demand? How do you estimate and make provisions for fire demand.

4. a) What are the tests conducted for determining the physical impurities of water? Explain the method of measuring the pH of a water sample along with the principle involved in the measurement of pH.
b) Briefly describe presumptive coliform test carried out in routine bacteriological examination of water.

5. a) What are different methods of aeration? Briefly explain.
b) Design and sketch, coagulation cum sedimentation tank with continuous flow for a population of 60,000 persons with daily requirement of 120 lpc. Over flow rate is 1000 litres/h/m^2 of plan area. Make suitable assumptions where needed.

6. a) What is filtration? Differentiate between slow and rapid sand gravity filters.
b) Enumerate the disinfectants used in water treatment. Discuss the affect of the presence of ammonia in water on chlorination process.

7. a) Write short notes on fluorides in water. Explain the process of defluoridation in water treatment.
b) Which treatments do you suggest for boiler feeding water? Explain any two methods.

8. Briefly discuss the design principles involved the design of water supply network to be laid in a multi storied buildings.

CODE No.:10BT60105

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2016

TRANSPORTATION ENGINEERING

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the history of road development plans in India briefly bringing out their salient features.
b) What are obligatory points? How do they influence the road alignment? With the help of neat sketches, explain about various obligatory points.

2. a) The speed of overtaking and overtaken vehicles is 85 and 50 KMPH respectively on two-way traffic road. If the acceleration of overtaking vehicle is 1 m/sec^2. Calculate safe overtaking sight distance, mention the minimum length of overtaking zone and draw a neat sketch of the overtaking zone and show the positions of the sign post.
b) How can the length of summit curve for stopping sight distance be calculated?

3. a) Clearly explain the procedure of Los Angeles Abrasion test on aggregates.
b) What are the desirable qualities of bituminous mix? How do these qualities affect road structure?

4. a) Enumerate the various methods of flexible pavement design. Briefly indicate the basis of design in each case.
b) Explain the critical locations of loading as regards wheel load stresses in cement concrete pavement. Discuss the Westergaard's concept and assumptions.

5. a) Discuss the importance of Highway Drainage.
b) Explain, how the surface water is collected and disposed off in rural and urban roads. What are the special problems in drainage of surface water in hill roads?

6. a) What are the requirements of an ideal permanent way?
b) Explain sleeper density? What sleeper density is adopted for Indian condition? Can sleepers be placed uniformly throughout the length of the rail and why?

7. a) Draw a neat sketch of a right hand turn out and indicate various components.
b) In a layout of a BG yard, a 6° curve branches off from a 3° main curve in opposite direction. If the speed is restricted to 22 KMPH on branch line and permissible value of cant deficiency is 7.61 cm, determine the speed restriction on main line.

8. Explain various factors affecting the selection of a suitable site for an airport.

CODE No.:10BT60106

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2016

FOUNDATION ENGINEERING

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) How would you decide the depth of exploration and the lateral extent of the investigation?
b) What is a bore log? Give a typical example.

2. a) A retaining wall with a smooth vertical back of height 8m, supports a cohesionless backfill of unit weight 19 kN/m^3 and angle of shearing resistance 30^0. The surface of the soil is horizontal. Find total active earth pressure per lineal metre of the wall by Rankine's theory. What is the increase in horizontal pressure if the soil slopes up from the top of wall at an angle of 30^0 to the horizontal?
b) What are the types of earth pressures? What is the state of equilibrium of soil corresponding to each type of earth pressure?

3. a) What is retaining wall? Discuss about the various types of retaining walls.
b) A trapezoidal masonry retaining wall 1m wide at top and 3m wide at its bottom is 4m high. The vertical face is retaining soil ($Ø=30^0$) at a surcharge angle of 20^0 with the horizontal. Determine the maximum and minimum intensities of pressure at the base of the retaining wall. Unit weights of soil and masonry are 20kN/ m^3 and 24 kN/m^3 respectively. Assuming the coefficient of friction at the base of the wall as 0.45, determine the factor of safety against over turning.

4. a) Explain in detail the different methods of improving stability of slopes.
b) An infinitely long slope having an inclination of 26° in an area is underlain by firm cohesive soil (G = 2.72, e = 0.50). There is a thin weak layer of 6 m below and parallel to the slope surface ($\mathbf{c}^1$ = 25 kPa, ϕ^1 = 16°). Compute the factor of safety (i) when slope is dry (ii) when ground water flow occurs parallel to the slope on the ground surface.

5. A square footing 1.8m x 1.8m is placed over loose sand of bulk density 16kN/m^3, saturated density 18 kN/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 Nc=30.14, Nq=18.4 and Nγ=15.1).

6. a) How is the safe Bearing capacity and settlement of a square footing is estimated making use of plate load test results in case of i) cohesive soils ii) cohesionless soils.
b) Write a critical note on estimation of safe bearing capacity using penetration test results.

7. a) List the circumstances under which a pile foundation becomes necessary.
b) On a project, a pile load of 600kN was desired. A pile load test was conducted and the result are as given below.

Load (tonnes)	0	300	550	800	1050	1300	1550
Penetration (mm)	0	4.5	5.5	9.5	14.0	21.3	30.0

Determine the adequacy of the test pile.

8. a) Sketch a completed well foundation for a Bridge pier. Indicate the various components and their functions.
b) How do you analyze the well for its lateral stability?

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CODE No.:10BT60201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2016

UTILIZATION OF ELECTRICAL ENERGY

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) How are electrical drives classified and explain briefly the status of D.C and A.C drives.
b) A 250V D.C shunt motor has an armature resistance of 0.5 ohms and field resistance of 250 ohms. When driving a constant torque load at 600 r.p.m, draws 21A. What will be the new speed of the motor if an additional 250 ohms resistance is inserted in the field circuit.

2. a) Give classification of various electric heating methods along with brief account of their working principle.
b) Discuss the method of temperature control of resistance ovens.

3. a) List out the differences between the carbon and the metal arc welding.
b) Compare A.C and D.C welding.

4. a) What is the basic nature of light? State the laws of illumination.
b) A filament lamp of 500W is suspended at a height of 5 meters above working plane and gives uniform illumination over an area of 8 m diameter. Assuming efficiency of reflector as 60% and efficiency of lamp is 0.9 watt per candle power, determine the illumination on the working plane.

5. a) Describe with neat sketches, various types of electric lighting fittings used for illumination.
b) Explain the following:
i) Specular reflection and diffuse reflection.
ii) Direct lighting and indirect lighting.

6. a) Write different features of traction motors.
b) Describe plugging and explain how it is applied to D.C motors.

7. a) An electric train has an average speed of 42 km/h on a level track between stops 1400 meters apart. It is accelerated at 1.7 km/h/s and is braked at 3.3 km/h/s. Draw the speed time curve for the run.
b) Explain the terms;
i) Adhesive weight ii) Train resistance iii) Specific energy consumption.

8. Write short notes on:
i) Steps in Energy Auditing.
ii) Cost benefit analysis with respect to energy auditing.
iii) Energy efficient motors.

CODE No.:10BT60202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2016

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 operation of 1-Ø semi converter fed DC separately excited motor for continuous current operation and also obtain speed-torque characteristics.
b) A 220 V, 975 r.p.m, 150 A separately excited DC motor has an armature resistance of 0.06 Ω. It is fed from a 1-Ø fully controlled rectifier with an ac source voltage of 230 V, 50 Hz. Assuming continuous conduction. Calculate
i) Firing angle for rated motor torque and 775 r.p.m.
ii) Motor speed for $\alpha = 160°$ and rated torque.

2. a) Explain the operation of 3-Ø semi converter fed DC series motor for continuous current operation and also obtain the expressions for output voltage and output current.
b) The speed of a 150 HP, 675V, 1750 r.p.m, DC separately excited motor is controlled by a 3-ϕ full converter. The converter is operating from a 3-ϕ, 440V, 50 Hz supply. The rated armature current of the motor is 170A. The motor parameters are $R_a = 0.099\Omega$, $L_a = 0.73$ mH and $K_a\phi = 0.33$ V/r.p.m. Neglect the losses in the converter system. Determine the No-load speeds at firing angles $\alpha = 0°$ and $\alpha = 30°$.
Assume that at No-load, the armature current is 10% of the rated current and is continuous.

3. a) Explain how forward motoring and regenerative braking operation of a separately excited DC motor can be obtained using a two quadrant chopper circuit.
b) A 220V, 500 r.p.m, DC shunt motor with an armature resistance of 0.08Ω and full load armature current of 150A is to be braked by plugging. Estimate the value of resistance which is to be placed in series with the armature to limit the initial braking current to 200A. What would be the speed at which the electric braking torque is 70% of its initial value?

4. a) With the help of neat circuit diagram and waveforms, explain the operation of single-quadrant chopper fed DC separately excited motor for continuous current operation.
b) A 230V , 960 r.p.m and 200A respectively excited DC motor has an armature resistance of 0.02Ω. The motor is fed from a chopper which provides both motoring and breaking operations. The source has a voltage of 230V. Assuming continuous conduction.
i) Calculate duty ratio of chopper for motoring operation at rated torque and 350 r.p.m.
ii) Calculate duty ratio of chopper for breaking operation at rated torque and 350 r.p.m.

5. a) Explain variable voltage characteristics of Induction motor.
b) Explain Torque and speed characteristics of Induction motor.

6. a) Write short notes on CSI fed IM operation.
b) Draw a suitable diagram and explain the working of slip-power recovery system using commentator less Kramer drive.

7. A 20 KW, 3-phase, 440V and 4 pole delta connected permanent magnet synchronous motor has the parameters $X_s = 5$ ohm, $R_s = 0$, rated power factor = 1.0. Machine is controlled by variable frequency control at a constant (V/f) ratio. Calculate armature current, torque angle and power factor at half full load torque and 750 r.p.m.

8. Explain the operation and control requirements of Switched Reluctance Motor with a neat diagram.

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CODE No.:10BT60301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2016

OPERATIONS RESEARCH

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the application areas of operations research?
b) A company produces two types of hats, type 1 and type2. Labour time required to manufacture type 1 hat is two times more than type 2 hat. If all hats are of the second type, only the company can produce a total of 500 hats a day. The market limits daily sales of the first and second type to 150 and 250 hats. The profits per hat are Rs.8 for type 1 and Rs.5 for type 2. Formulate the problem as linear programming model for maximize the profit and determine the optimal solution.

2. a) Distinguish between Transportation and Assignment models.
b) Solve the following transportation problem to maximize profit. Cell entries are profits in Rs/unit. Supply and Demand are in units.

	Destination				
Source	1	2	3	4	Supply
A	40	25	22	33	200
B	44	35	30	30	60
C	38	38	28	30	40
Demand	80	40	120	60	

3. a) What is meant by Group replacement policy?
b) A fleet owner finds from his past records that the cost per year of running a vehicle whose purchasing price is Rs. 5000 are in the following table:

Year	1	2	3	4	5	6	7	8
Maintenance cost 9Rs.)	1500	1600	1800	2100	2500	2900	3400	4000
Resale price (Rs.)	3500	2500	1700	1200	800	500	500	500

At what age is replacement due?

4. a) Explain various elements of queen characteristics.
b) Arrival rate of telephone calls at a telephone booth are according to Poisson distribution, with an average time of 9 minutes between two consecutive arrivals. The length of telephone call is assumed to be exponentially distributed, with mean 3 minutes.
i) Determine the probability that a person arriving at the booth will have to wait.
ii) Find the average queue length that is formed from time to time.
iii) The telephone company will install a second booth when convinced that an arrival would expect to have to wait at least four minutes for the phone. Find the increase in flow rate of arrivals which will justify a second booth.
iv) What is the probability that an arrival will have to wait for more than 10 minutes before the phone is free?
v) What is the probability that he will have to wait for more than 10 minutes before the phone is available and the call is also complete?
vi) Find the fraction of a day that the phone will be in use.

5. a) What is crashing? What are the advantages of project crashing?

b) The following table gives the activities in a project and other relevant information

Activity	1-2	1-3	2-3	2-4	3-4	4-5
Duration	20	25	10	12	6	10

i) Draw the network for the project.

ii) Find critical path.

iii) Find free, total and independent floats for each activity.

6. An oil refinery receives crude oil, at an average rate of Five tankers per day. The unloading facilities which operate 24 hours per day can handle five tankers at a time, but can unload tankers at an average rate of 10 per day. Under the usual assumptions of poisson arrival and exponential service times, determine:

i) Average number of tankers in the systems.

ii) Average time spent by the tanker in the system.

iii) Average waiting time of a tanker in the queue.

iv) Percentage of time in which exactly 10 tankers are in the system.

7. a) Define Baye's decision rule. Explain various steps involved in the decision theory.

b) A person has two independent investments A and B are available to him, but he can undertake only one at a time due to certain constraints. He can choose A, first and then stop, or if A is successful, then take B, or vice versa. The probability of success of A is 0.60, while for B it is 0.4. Both the investments require an initial capital outlay of Rs. 10,000 and both return nothing if the venture is unsuccessful. Successful completion of A will return Rs. 20,000 and successful completion of B will return Rs. 24,000. Draw the decision tree and determine the best strategy.

8. a) Players A and B play a game in which each player has three coins (Rs.20, Rs.25 and Rs.50). Each of them selects a coin without the knowledge of the other person. If the sum of the values of the coins is an even number, A wins B's coin. If that sum is an odd number, B wins A's coin.

i) Develop a pay-off matrix with respect to Player A.

ii) Find the optimal strategies for the players.

b) Explain the following terms:

i) Two-person zero-sum game.

ii) Mixed strategy.

iii) Saddle point.

iv) Pure strategy.

CODE No.:10BT60302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2016

METROLOGY AND MEASUREMENTS

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the procedure for deriving End Standards from Line Standards.
b) Build up the following dimensions with minimum number of slip gauges (**M-87**).
i) 29.758 mm ii) 46.635 mm

2. a) Explain different types of gauges used in inspection.
b) Determine the tolerances on the hole and shaft & maximum and minimum sizes of both hole and shaft for a precision running fit designated by 50 H7 g6, 50 mm lies between the range of 30-50 mm. $i = 0.45(D)^{0.333} + 0.001(D)$ and the fundamental deviation of the shaft = $- 2.5\ D^{0.34}$.

3. a) Classify the different types of comparators and explain any two of them with a neat sketch.
b) Describe the advantages and disadvantages of mechanical comparators.

4. a) Draw an illustrative line diagram of a pitch measuring machine and describe its working.
b) Indicate briefly the effect of the lead angle on a three wire measurement for an effective diameter of a screw thread.

5. a) Describe about generalized measurement system and explain about various elements involved in it.
b) Explain in detail about classification of transducers.

6. a) Describe the construction, working and theory of diaphragm type strain gauge transducer used for measurement of pressure.
b) Explain the construction and principle of working of prony brake. List its advantages and disadvantages.

7. a) Explain the working of Thermoelectric Pyrometer.
b) What are the requirements of a strain gauge and explain briefly mechanical strain gauge.

8. Write a short note on
i) Transfer functions
ii) Mathematical models of systems
iii) Zero order system

CODE No.:10BT60303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2016

HEAT TRANSFER

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define Wein's Law, Kirchoff's law and Stefan-Boltzman law of radiation along with mathematical formulae.
b) A surface at 250 ºC exposed to the surroundings at 110 ºC convects and radiates heat to the surroundings. The convection coefficient and radiation factor are 75 W/m² ºC and unity respectively. If the heat is conducted to the surface through a solid of conductivity 10 W/m ºC, what is the temperature gradient at the surface in the solid?

2. a) What is critical insulation thickness and state its significance.
b) Consider a spherical shell (k = 386 W/m .°C) of inner diameter 10 cm and outer diameter 16cm. Determine heat Transfer through it if inner surface and outer surface are maintained at 250 °C and 10 °C respectively.

3. a) What is semi-infinite medium? Give examples of solid bodies those can be treated as semi-infinite mediums for heat transfer purposes.
b) An aluminum sphere weighing 5.5 kg and initially at a temperature of 290 °C is suddenly immersed in a fluid at 15 °C. The convective heat transfer coefficient is 58 W/m² K. Estimate the time required to cool the aluminum to 95 °C, using lumped capacity method of analysis.

4. a) Write the momentum equation for laminar boundary layer on a flat plate. List the assumptions made in deriving this equation.
b) Define Reynolds, Nusselt, Prandtl and Stanton Numbers. Explain their importance in convective heat transfer.

5. a) Define the local and average skin friction coefficients for a flat plate at zero incidence, for laminar flow.
b) Lubricating oil at a temperature of 60 ºC enters 1 cm diameter tube with a velocity of 3 m/sec. The tube surface is maintained at 40 ºC. Assuming that the oil has following average properties, calculate the tube length required to cool the oil to 45 ºC. ρ = 865 kg/m³, k = 0.14 W/mK, C_p = 1.78kJ/kg ºC. assume the flow to be laminar and fully developed.

6. a) What is Condensation? Distinguish between the mechanisms of Film wise condensation and Drop wise condensation.
b) Calculate the nucleate boiling heat transfer coefficient for water boiling on a horizontal tube whose wall temperature is maintained at 10 °C above the saturation temperature of the water. Assume that the water is at a pressure of 10 bar. Determine the change in value of the heat transfer coefficient when i) the temperature difference is increased to 20 °C at the pressure of 10 bar and ii) the pressure is raised to 20 bar and ΔT_e=10 °C.

7. Hot oil is to be cooled in a double-tube counter-flow heat exchanger. The copper inner tubes have a diameter of 2 cm and negligible thickness. The inner diameter of the outer tube (the shell) is 3 cm. Water flows through the tube at a rate of 0.5 kg/s, and the oil through the shell at a rate of 0.8 kg/s. Taking the average temperatures of the water and the oil to be 45 °C and 80 °C, respectively, determine the overall heat transfer coefficient of this heat exchanger.

8. Explain the following:
i) Black body and Grey body ii) Specular and Diffuse reflector iii) Radiosity and Irradiation.

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CODE No.:10BT60304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2016

CAD-CAM

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Differentiate between engineering design and computer aided design.
b) Explain Product cycle with the help of a neat diagram.

2. a) What are the basic reasons for introducing CAD? List the benefits of CAD/CAM systems.
b) With a suitable example, explain the various steps involved in design process.

3. a) Explain the parametric representation of B-Splaine surface.
b) A cubic Bezier curve is described by the four control points: (0,0), (2,1), (5, 2), (6,1). Find the tangent to the curve at t = 0.25.

4. a) What is meant by machining centre? Explain the features of a turning centre.
b) The component to be machined is shown in Fig. 1. Write a program using canned cycles to drill all the holes shown in Fig 1.

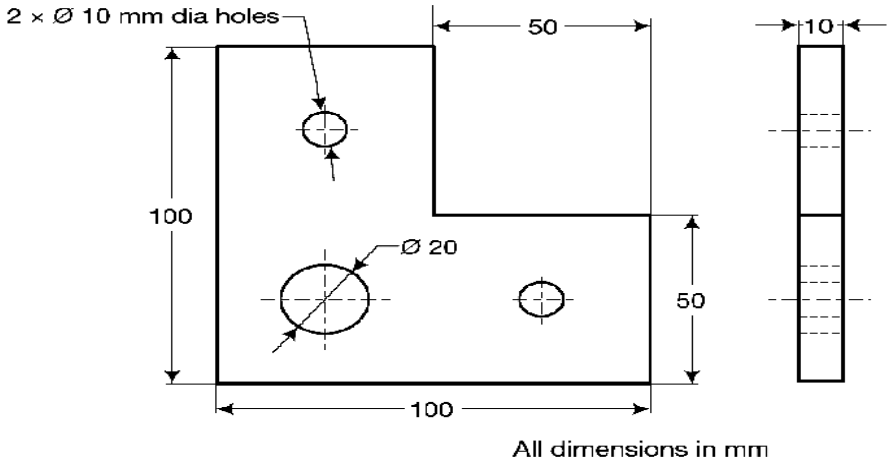

Fig. 1

5. a) What is Group Technology? List out its benefits.
b) Discuss the basic code structures used in Group Technology.

6. a) Classify various types of material handling systems and discuss about Automated Guided Vehicle.
b) Discuss about Flexible Manufacturing System with a neat diagram, mention its advantages and limitations.

7. a) Discuss about the working of MRP I.
b) What is meant by CIM? Mention the benefits of CIM.

8. a) Define the term quality and discuss about various types of contact inspection methods.
b) Discuss about working of a CMM and mention its advantages and limitations.

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CODE No.:10BT60305

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2016

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 carries a load of 5KN the line of load being at a horizontal distance of 32mm from the inside edge of a horizontal section through the centre of curvature being 38mm from the same edge. The horizontal section is a trapezium whose parallel sides are 13mm and 26mm and height is 32mm. Determine the greatest tensile and compressive stresses in 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. a) What are the advantages of V-Belts over Flat belts?
b) Distingush between open and cross belt drives.

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 1KN. 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. Select a single row deep groove ball bearings for a radial load of 4000N and an axial load of 5000N, operating at a speed of 1600 r.p.m. for an average life of 5 years at 10 hours per day. Assume uniform and steady load.

6. A pair of straight teeth spur gears is to transmit 20 KW when the pinion rotates at 300 r.p.m. The velocity ratio is **1 : 3**. The allowable static stresses for the pinion and gear materials are 120 MPa and 100 MPa respectively. The pinion has 15 teeth and its face width is 14 times the module. Determine *module, face width* and *pitch circle* diameters of both the pinion and the gear from the standpoint of strength only, taking into consideration the effect of the dynamic loading.

The tooth form factor y can be taken as $y = 0.154 - \frac{0.912}{No.ofTeeth}$ .and the velocity factor $C_v = \frac{3}{3+v}$

where $\boldsymbol{v}$ is expressed in m / s.

7. a) Explain the terms of the spring : *i*) Free length; *ii*) Solid height; *iii*) Spring rate; *iv*) Active and inactive coils; *v*) Spring index; *vi*) Stress factor.
b) Design a helical compression spring for a maximum load of 1000N for a deflection of 25mm using the value of spring index as 5. The maximum permissible shear stress for spring wire is 420 MPa and modulus of rigidity is 84 kN/mm^2.

Take Wahl's factor, K = $\frac{4C-1}{4C-4} + \frac{0.615}{C}$, where C = Spring index.

8. For the following data, design a connecting rod for a high speed four stroke I.C engine. Diameter of piston = 0.1525m, Weight of reciprocating parts = 27.5N, Length of connecting rod (centre to centre) = 0.495m, Stroke = 0.215m, rpm = 2000 (when developing 50kW); possible over speed = 3000 rpm, compression ratio = 6:1, maximum explosion pressure = 3.5MPa. Assume suitable missing data.

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CODE No.:10BT60306

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2016

AUTOMOBILE ENGINEERING

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the main sources of pollutants from gasoline/petrol engines?
b) What are the sources of HC formation in petrol engine?
Explain various factors which effect the HC formation.

2. a) Explain the fuel supply system of a S.I engine with a neat line diagram.
b) What are the requirements of a good diesel engine fuel injection system?

3. a) Describe the operation of the thermostat. What is the main advantage of using a thermostat in the cooling system?
b) Write a detailed note on the electronic ignition system. What are the advantages over the conventional ignition system?

4. a) Discuss the emissions from diesel engines. On what factors these emissions will depend up on?
b) What are the advantages and disadvantages of using LPG in S.I engines?

5. a) Using simple diagram, discuss the construction and working of following accessories.
i)Horn ii)Wiper
b) Why it is necessary to aim the Head lights correctly and write the procedure to adjust.

6. a) What is synchronizer? With a neat diagram, describe the process of engagement of the 2^{nd} - gear of a constant mesh gear box.
b) With a simple diagram, explain the working principle of a differential, when the vehicle taking left-turn.

7. a) What are the functions of the steering system and explain Davis steering mechanism.
b) Explain the terms: Camber, Castor, Kingpin inclination and toe-in with neat figures.

8. a) What are the needs of suspension system? Describe torsion bar.
b) What are the merits of hydraulic brake system over mechanical brake system?

CODE No.:10BT60401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2016

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) Determine the response of the causal system **y(n) - y(n-1) = x(n) + x(n-1**) to inputs **x(n) = u(n)** and **x(n) = 2 - nu(n)**.Test its stability
b) Determine whether the following system are linear, time-invariant
i) **y(n) = Ax(n) +B** ii) **y(n) =x(2n)**

2. a) Compute linear convolution of the two sequences $x_1(n)=\{1,1,2,2\}$ and $x_2(n)=\{1,2,3,4\}$ using DFT.
b) State any seven 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 decimation in time decomposition.

4. a) Obtain the direct form-1 realization for the system described by the following difference equation y(n) = 2y(n - 1) + 3y(n - 2) + x(n) + 2x(n - 1) + 3x(n - 2)
b) Realize y(n) + y(n + 1) + (1/4)y(n - 2) = x(n) in cascade form.

5. a) What are the advantages and disadvantages of bilinear transformation?
b) Obtain the digital filter transfer function and the differential equation of analog filter $H(s)=\frac{1}{s+1}$ by using impulse invariance method.

6. a) Prove that an FIR filter has linear phase if the unit sample response satisfies the condition h(n)= ± h(M-1-n), n =0,1,….. M-1.Also discuss symmetric and anti symmetric cases of FIR filter.
b) The impulse response of a causal LTI FIR system is given by
$h(n) = a_0\delta(n) + a_1\delta(n-1) + a_2\delta(n) + a_3\delta(n-3) + a_4\delta(n-4) + a_5\delta(n-5) + a_6\delta(n-6)$ for what values of the impulse response samples will its frequency response $\mathbf{H}(e^{jw})$ have a linear phase.

7. a) Explain sampling rate conversion using neat block diagram.
b) Explain decimation process with an example.

8. Draw the block diagram of digital tape recorder system and explain. What are the advantages of digital recording system?

CODE No.:10BT60402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2016

DIGITAL COMMUNICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) List and explain the advantages of digital communication over analog communication.
b) Explain the different elements of PCM system with neat block diagram.

2. a) Explain with a neat diagram, the adaptive delta modulation system.
b) Derive the SNR in a delta modulation system.

3. a) Give the comparison between the various digital modulation techniques for data transmission.
b) Explain power spectra of BPSK and BFSK.

4. a) With suitable block diagram, explain the principle and operation of DPCM scheme.
b) Derive an expression for probability of error for binary ASK signaling scheme. Compare coherent and non coherent error probabilities.

5. a) Derive the equation for probability of error for PSK scheme.
b) Find the output of matched filter if the input is rectangular pulse.

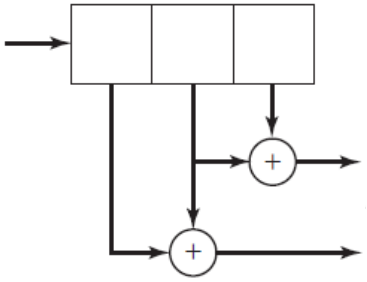
6. a) State and prove Shanon source coding theorem.
b) A discrete source emits one of 5 symbols once every millisecond with probabilities 1/2, 1/4, 1/8, 1/16, 1/16 respectively. Compute the Huffman coding of each symbol and hence find its efficiency.

7. a) Explain the syndrome method for decoding of a linear block code.
b) Consider a (7, 3) linear block code with the generator matrix.

$$G = \begin{bmatrix} 1 & 1 & 1 & 0 & 1 & 0 & 0 \\ 0 & 1 & 1 & 1 & 0 & 1 & 0 \\ 1 & 1 & 0 & 1 & 0 & 0 & 1 \end{bmatrix}$$

i) Find all the code vectors in the code.
ii) Calculate the parity check matrix H.
iii) Find the minimum distance of the code.

8. a) Calculate the output of the below convolutional encoder for the input sequence 11010.



b) Describe the Viterbi decoding algorithm with an example.

CODE No.:10BT60403

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2016

MICROWAVE ENGINEERING

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) An air-filled rectangular waveguide has dimension of a = 6cm and b = 4cm. The signal frequency is 3 GHz. Compute the following for the TE_{10}, TE_{01}, TE_{11}, TM_{11} modes.
i) Cut off frequency ii) Wavelength in the waveguide iii) Group velocity
iv) Phase constant v) Phase velocity vi) Wave impedance of the waveguide.
b) Distinguish between Strip and Micro strip lines.

2. a) A circular waveguide has radius of 3cm and is used as a resonator for TM_{011} mode at 10 GHz by placing two perfectly conducting plates at its two ends. Determine the minimum distance between the two end plates.(Take $P_{01} = 2.405$).
b) Derive an expression for f_0 in rectangular and circular cavity resonator.

3. a) What are the different types of directional couplers? With neat diagram, explain the working principle of two-hole directional coupler. What are the applications of Directional coupler?
b) A directional coupler of 10 dB coupling factor and 40 dB directivity produces a transmission loss of 1 dB. For an input power of 10 mW at the input port of the main arm, determine the power at the other ports.

4. a) What is directional coupler? Discuss various performance parameters of the coupler.
b) Discuss the working and application of Circulator and Isolators.

5. a) What are the limitations of conventional tubes at low frequencies?
b) Using Applegate diagram, explain the principle of operation of a reflex klystron oscillator.
c) What is electronic admittance of reflex klystron oscillation?

6. a) Draw the types of Anode blocks used for a Magnetron.
b) Explain the working of multicavity Magnetron.
c) How pi-mode in Magnetron is separated from other modes?

7. a) What is Gunn effect? Describe the different modes of operation of Gunn Oscillator.
b) Write short notes on RWH theory.

8. a) Explain the different methods of measuring Q of a cavity.
b) What are the different methods involved in measuring the frequency?

CODE No.:10BT60404

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2016

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. a) Describe briefly about the evolution of microprocessors.
b) List the types of Instructions of 8085 microprocessor with examples.

2. Explain the memory segmentation in 8086 microprocessors.

3. a) Write a program to convert BCD data to Binary data using instruction set of 8086.
b) Explain the relative addressing mode and implied addressing mode with its syntax with an example.

4. Give the interfacing of following devices with 8086 processor.
i) A/D Converter
ii) D/A Converter
iii) Stepper Motor

5. Describe 8251 USART and interfacing with 8086 processor with neat diagrams.

6. Describe the functional units of 8259 PIC and importance of cascading multiple PICs.

7. a) Discuss the internal RAM organization of 8051 microcontroller.
b) State any 10 instructions from the instruction set of 8051 microcontroller.

8. a) Explain the interrupt structure of 8051 microcontroller and explain how interrupts are prioritized.
b) What is the difference between the microprocessor and microcontroller?

CODE No.:10BT60405

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2016

VLSI DESIGN

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain step-by-step procedure for a typical n-well process with neat diagrams.
b) Explain the concepts of 'Lithography' and 'Probe testing' related to IC production process.

2. a) Draw and explain the significance of various pull up forms.
b) Draw and explain the characteristics of nMOS transistor and its body effect.

3. a) Explain the different VLSI circuit design processes with suitable example.
b) What are limitations of scaling for VLSI circuits and briefly explain them.

4. a) What is sheet resistance? Explain how sheet resistance of MOS transistor and NMOS inverter can be found.
b) Explain about wiring capacitance.

5. a) Draw the block diagram of Booth Multiplier, the basic cell layout and also explain its principle.
b) Discuss the subsystem design of High density Memory element.

6. a) Draw the typical standard-cell structure showing low-power cell and explain it.
b) Sketch a diagram for two input XOR using PLA and explain its operation with the help of truth table.

7. a) Explain the advantages, applications and types of simulation related to VLSI Design flow.
b) Explain the VHDL synthesis process with the help of neat schematic diagram.

8. a) Discuss about chip level test techniques.
b) Explain about automatic test pattern generation.

CODE No.:10BT60501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2016

THEORY OF COMPUTATION

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Construct DFA for the language containing odd number of zero's and odd numbers of 1's over the alphabet {0,1}.
b) Compare NFA and DFA with suitable example. Analyze its computing power.

2. a) Construct a Moore machine equivalent to the Mealy machine M given in table.

States/Σ	a	b
→ q_0	$\{q_0, q_1\}$	q_2
q_1	q_0	q_1
ⓠ	-	$\{q_0, q_1\}$

Construct a Mealy machine which can output EVEN, ODD according as the total number of 1's encountered is even or odd. The input symbols are 0 and 1.
b) Design a Mealy machine that uses its state to remember the last symbol read and emits output `y' whenever current input matches to previous one, and emits n otherwise.

3. a) Show that L = $\{a^m b^n / m > n\}$ is not regular.
b) State and prove Ardens theorem.

4. a) State and Prove pumping lemma for CFL's.
b) The language defined as L= $\{a^n b^n c^n / n>=1\}$ is context free or not. Prove it.

5. a) Find a Greibach normal-form grammar equivalent to the CFG: $S \rightarrow AA \mid 0$, $A \rightarrow SS \mid 1$.
b) Find a CFG with no useless symbols equivalent to $S \rightarrow AB \mid CA$, $B \rightarrow BC \mid AB$, $A \rightarrow a$, $C \rightarrow aB \mid b$.

6. a) Construct a PDA equivalent to the following grammar.
$S \rightarrow a\,AA$, $A \rightarrow aS \mid bS \mid a$
b) Construct a pushdown automata for the language with set of all strings over alphabet $\{a,b\}$ with exactly twice as many a's as b's.

7. a) Design Turing Machine for the language perform adding of two unary numbers.
b) Write short notes on Church hypothesis.

8. a) Explain about Church's Hypothesis.
b) Construct the LR(0) items for the given grammar.
E → E +T /T
T → T *F/ F
F → (E) / a

CODE No.:10BT60502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2016

UNIX 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 UNIX Architecture. Compare UNIX with other operating systems.
b) Explain general purpose utilities and file handling utilities in UNIX.

2. Explain the following commands in UNIX with a sample for each
i) cat ii) grep iii) egrep iv) fgrep v) cat vi) tail vii) sort

3. a) What is a Sell? What are Shell responsibilities? What are different types of shells in UNIX?
b) Write a shell script and explain how it works.

4. a) Explain File Descriptors and System calls with example for each.
b) Explain the fseek, fgets, fflush and fwrite commands with a case study.

5. What is a process? What are process identifiers? What is a process table? What are system processes? What are various commands used for managing the processes explain in detail with a sample for each?

6. a) What is chown? Briefly describe the importance of read and write with locking.
b) What is file locking? Compare and contrast advisory locking *vs*. mandatory locking.

7. a) What are message queues? Briefly describe message control commands.
b) What are process pipes? Briefly describe *shmget* and *shmat*.

8. What is socket? What are attributes of sockets? What is socket address? What are advantages of sockets explain in details?

CODE No.:10BT60503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2016

DATA WAREHOUSING AND DATA MINING

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. In the context of data preprocessing, discuss in detail with examples:
i) Data discretization and concept hierarchy.
ii) Data cleaning.

2. a) Discuss in detail multi dimensional data model and three associated schemas with examples.
b) Discuss in detail various OLAP operations with examples.

3. a) Explain about the Discretization and Concept Hierarchy generation for numerical data.
b) List the different forms of Data Preprocessing and explain about Data Integration.

4. a) Discuss in detail with examples, the notions of association rule and its support and confidence.
b) Discuss in detail the notions of closed frequent itemset and maximal frequent itemset with examples.

5. a) What are the various ways of improving efficiency of a priori algorithm?
b) Explain in detail with examples, the two formats of data for mining frequent item sets.

6. a) Write in detail, classification by decision tree induction methods with examples.
b) Explain in detail, classification by Bayesian methods.

7. Write short notes on:
i) Mining data streams.
ii) Mining time series data.

8. Explain the following with examples:
i) Multimedia data mining.
ii) Mining WWW.

CODE No.:10BT60504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2016

DISTRIBUTED COMPUTING

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the advantages and disadvantages of Distributed Computing Systems.
b) Briefly explain the operating system concepts relevant to Distributed Computing.

2. a) Explain about distributed dead lock detection.
b) Explain about centralized dead lock detection.

3. a) Explain about RPC Model.
b) Explain, how to choose a paradigm for an application.

4. a) Explain event synchronization in datagram sockets along with diagram.
b) Compare Iterative and Concurrent Servers.

5. a) Differentiate between message passing and distributed objects.
b) Explain Java RMI architecture.

6. a) Explain the architecture of RMI with Client call back.
b) What is Stub downloading?

7. a) Explain the servlet support architecture.
b) Explain the conceptual model of web services.

8. a) Compare **WWW** and lotus notes.
b) Explain about Mobile Agents.

CODE No.:10BT61001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2016

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 attenuation in optical fibers with figures.
b) Write the equation for the total internal reflection of the light rays to an optical fiber cable. And derive the expression for the numerical aperture of the fiber.

2. a) Explain about following splices.
i) Fussion splices. ii) Mechanical splices.
b) Explain about fiber alignment and joint losses.

3. a) With a neat diagram, explain the interferometric method of measurement of length.
b) Explain in detail about fiber optic gyroscope with a neat diagram.

4. a) Explain in detail about three level and four level lasers.
b) Discuss in detail about gas lasers.

5. Explain the following.
i) Laser Doppler velocity meter. ii) Laser welding. iii) Laser trimming of material.

6. a) Explain how lasers are useful in dermatology.
b) Explain how lasers are useful in gynecology.

7. a) Discuss the principle involved with the time averaged holography for Loading analysis
b) Discuss the application of Holography in NDT.

8. a) Explain the principle of acousto-optic modulator with its performance characteristics.
b) Give the merits and demerits of acousto-optic modulator.

CODE No.:10BT61002

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2016

BIOMEDICAL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the importance of Measurements in a Biomedical Instrumentation System.
b) With a neat black diagram, explain about various components present in a Biomedical Instrumentation System.

2. a) Explain how bioelectric potentials are produced. What are the different theories involved in the generation of bioelectric potentials? Give examples.
b) Explain about **Nernst** equation for bio electric potentials.

3. a) Discuss various types of Biochemical electrodes and give their applications.
b) Distinguish between external and internal electrodes and give some examples.

4. a) Give the relation between electrical and mechanical activities of heart.
b) Explain recording setup of ECG machine with a neat diagram, giving a detailed description of its components.

5. a) Explain EMG recording giving details of its origin, recording setup and analysis.
b) Explain the function of Central Nervous System with neat diagram.

6. a) With a neat diagram, explain about a defibrillator.
b) Discuss about Hemodialysis machine.

7. a) Describe the respiratory system in the human body.
b) Write a short note on spirometer.

8. Explain the following:
i) Magnetic resonance imaging.
ii) Ultrasonography.

CODE No.:10BT61201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2016

OBJECT ORIENTED ANALYSIS AND DESIGN

[Computer Science and Engineering, Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the Conceptual Model of UML in detail.
b) Describe the steps to importance of modeling.

2. Explain the following using UML.
i) Single Inheritance.
ii) Interfaces.
iii) Packages.

3. a) Write notes on Implementation diagrams.
b) Discuss about USDP Phases.

4. a) What is an action? Provide the visual distinction between different kinds of messages used by UML.
b) Explain the common uses of interaction diagrams.

5. a) Write notes on Sequence and collaboration diagrams.
b) Explain about various steps involved to model system architecture.
c) Differentiate between System design and Detail design.

6. How do you model the following features in UML? Explain each with example.
i) Events and Signals
ii) Time and Space

7. a) Explain, how to model the source code and executable release.
b) Explain the contents of a deployment diagrams.

8. Draw and explain the following for typical library management system.
i) Deployment diagram.
ii) Class diagram.

CODE No.:10BT61202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2016

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 the applications and advantages of layered architecture.

2. Explain about public switched telephone network.

3. Discuss the design issues of data link layer in details with suitable diagrams.

4. Explain in detail about
i) Pure ALOHA ii) Slotted ALOHA iii) CSMA/CD

5. Compare the link state routing algorithm with shortest path routing algorithm with necessary parameters.

6. How does the TCP achieve reliability in unreliable inter network? Narrate it.

7. Explain about Electronic Mail.

8. a) Explain about Transposition techniques.
b) Explain substitution methods.

CODE No.:10BT61501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2016

MODELING AND SIMULATION

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the types of performance metrics required to be considered for the computer systems shared by many users.
b) Why Weibull Distribution is used? List and explain its key characteristics.

2. a) What are the types of stochastic process? With a neat diagram, explain the relationship among stochastic process.
b) i) Explain the applications of Little 's law.
ii) A monitor on disk server showed that the average time satisfy an I/O request was 100 milliseconds. The I/O rate was about 100 requests per second. What was the mean number of requests at the disk server?

3. a) Briefly explain about the different types of Workloads.
b) Explain about the multi parameter histogram in detail.

4. a) Distinguish between Software and Hardware Monitors.
b) What are the techniques for improving program performance?

5. a) Explain how to compare two alternatives by using sample data.
b) How the regression parameters that give minimum error variance? Explain.

6. a) Explain the concept of 2^2 factorial design with example.
b) Discuss different types of experimental designs used in computer systems.

7. a) Explain the generation of Pseudo-Random numbers with an example.
b) Discuss about the combined linear congruential generator for random number.

8. a) What are the goals of verification and validation process? List and explain its components.
b) Discuss advantages and applications of simulations. How simulations are actually performed?

CODE No.:10BT70501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2016

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) Explain, how lexical Analyzer is generated using LEX.

2. a) Discuss the role of lexical analyzer in detail.
b) Draw the transition diagram for relational operators and unsigned numbers in Pascal.

3. a) Explain the basic operations of Shift Reduce Parser and perform Shift Reduce Parsing of the input string "id1-id2*id3" by conserving the grammar

$E \rightarrow E- E$
$E \rightarrow E*E$
$E \rightarrow id$

b) Explain, how ambiguous grammar's method can be parsed with an example.

4. a) Give a translation scheme for case statement.
b) Write short notes on various intermediate code forms.

5. Give translation scheme for checking type of each statement for the given grammar. Use void as basic data type for statement that have no values and also use a Boolean basic data type wherever needed.
$S \rightarrow id:=E$ $S \rightarrow$ if E then S $S \rightarrow$ while E do S/S; S

6. What are the language facilities for dynamic storage allocation?

7. a) Write in detail about the issues in the design of a code generator.
b) Define basic block. Write an algorithm to partition a sequence of three-address statements into basic blocks.

8. Explain about register allocation and assignment in target code generation.

CODE No.:10BT71201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2016

WEB PROGRAMMING

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the functionality of the following tags:
i) COLGROUP ii) OL and UL iii) META.
b) Write a CSS rule that places a background image halfway down the page, tilling horizontally. The image should remain in place when the user scrolls up or down.

2. a) Write a JavaScript code block, which checks the contents entered in a form's Text element. If the text entered is in the lower case, convert to upper case. If the text entered is in the upper case, convert to lower case.
b) Discuss the following JavaScript concepts with an example program:
i) Objects ii) Strings

3. a) How to create an XML document? Explain with an example.
b) Discuss different techniques that are used to process XML files.

4. a) What are the Additional capabilities of HTTP Servlets? Explain.
b) Explain the life cycle of Servlet. Write a code for demo Servlet to explain all the stages of Servlet life cycle.

5. a) What are the limitations of Servlets? How JSP overcomes these problems?
b) Write short notes on JSP scripting elements.

6. a) Describe various directive elements in JSP.
b) How to handle Syntax Errors in JSP? Explain.

7. a) Explain custom-tag libraries in JSP.
b) Discuss about usage of JavaBean component in JSP.

8. Explain in detail about JSPTL.

CODE No.:10BT71204

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech II Semester (SVEC10) Regular/Supplementary Examinations May - 2016

CRYPTOGRAPHY AND NETWORK SECURITY

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain about various security attacks.
b) Explain Hill cipher method with the following example.
Plaintext = networksecurity
Secretkey = cryptography.

2. a) "It is possible to convert any block cipher into a stream cipher by using the CFB mode." Explain.
b) Explain the use of link encryption and end-to-end encryption across a packet- switching network.

3. a) Explain X.509 hierarchy with a hypothetical example.
b) Explain key Distribution using Public key Cryptography.

4. a) Explain Radix 64 conversion.
b) What are different cryptographic algorithms used for S/MIME? Explain.

5. a) Discuss the purpose of SA selectors.
b) What are the features of Oakley algorithm? Discuss the three basic requirements that must be satisfied in cookie generation.

6. Explain about Secure Electronic Transaction.

7. a) Write about Bot nets.
b) Write about virus counter measures.

8. a) Explain the working of Packet-filtering router.
b) What is a reference monitor? What are the rules that it has to enforce? Discuss its properties.

CODE No.:10BT6HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

MANAGEMENT SCIENCE

[Electrical and Electronics 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) Why organizations should conduct SWOT analysis? List its benefits.
b) Management is science and an art? Explain.

2. a) State the advantages and limitations of Decentralization.
b) Explain the following:
i) Span of Control ii) Delegation of authority iii) Types of communication

3. a) List and explain the different types of forecasting methods.
b) Differentiate between a process layout and product layout with examples.

4. a) Discuss the functions of Stores Management.
b) A Particular item has demand of 9000 units/year. The cost of procurement is Rs.100 and the holding cost per unit is Rs.2.40/year. The replacement is instantaneous and no shortages are allowed.
Determine: i) The economic lot size .
ii) The time between orders.
iii) The number of orders per year.

5. a) Enumerate the assumptions of McGregor's theory of 'X' and 'Y'.
b) What is job evaluation? Explain the methods of job evaluation.

6. a) What is meant by Crashing?
b) A small project is composed of seven activities whose time estimates are listed below. Activities being identified by their beginning (i) and ending (j) node numbers. Draw the network. Calculate the expected duration and variance of each activity. Find the expected project completion time.

Activity	Estimated duration in weeks		
i - j	**Optimistic**	**Most likely**	**Pessimistic**
1 - 2	1	1	7
1 - 3	1	4	7
1 - 4	2	2	8
2 - 5	1	1	1
3 - 5	2	5	14
4 - 6	2	5	8
5 - 6	3	6	15

7. a) Discuss the opportunities in India for Women Entrepreneurs.
b) Explain the role of Entrepreneurship in Economic development.

8. a) Explain the important elements of Total Quality Management. Why is customer focus so important in TQM?
b) Why does management need information? Is it possible for the management of an organization to make effective decisions without the aid of an information system? Discuss.

CODE No.:10BT40502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

OBJECT ORIENTED PROGRAMMING

[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) Is it possible to define the function members outside the class? Illustrate this with a **C**++ program depicting "student class".
b) Give the restrictions on the usage of local classes.

2. a) Implement the "Calculator" function using the class hierarchy "Hybrid inheritance".
b) Draw the "is a" and "part of" relationship diagram for an example of your own.

3. a) Draw the class diagram for ATM transaction and explain each relationships used in that diagram.
b) Describe the various String handling functions available with String Class.

4. a) Write a Java program to analyze the marks of the students who are placed in WIPRO from your college using abstract class.
b) List out the uses of "new" and "super" keywords.

5. a) Discuss different Checked Exceptions defined in java.lang.
b) Illustrate the usage of nested try statements.

6. a) Explain creation and synchronization of threads.
b) Write about Graphics class.

7. a) Write a Java program to show various mouse tracking and mouse clicking events.
b) Draw the event handling diagram for window listener class.

8. Explain with a sample program for the JFrame.

CODE No.:10BT60405

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

VLSI DESIGN

[Electrical and Electronics Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Illustrate the fabrication process for CMOS P-well with legible sketches.
b) Explain twin tub structure, mentioning its merits and demerits.

2. a) Derive an expression for input voltage of CMOS inverter when both Transistors are in Saturation.
b) Define Body effect and Threshold Voltage. Justify Adjustment of Threshold Voltage is necessary or not?

3. a) Explain the VLSI design flow with the help of flow chart.
b) Briefly discuss the limitations of the scaling on MOS devices.

4. Differentiate Pseudo n-MOS, DCVSL Logic and Domino Logic with respect to their architectures and functionality with readable sketches.

5. a) Explain the operation of a carry-select adder.
b) Draw the schematic of a 4**x**4 array multiplier and explain its operation.

6. a) Explain FPGA and CPLD design approaches with the help of neat sketches.
b) Explain the designing of Complex Logic Block (CLB) of FPGA.

7. a) Write the VHDL code for BCD-7 Segment Decoder.
b) Describe about Layout Synthesis.

8. Explain the following:
i) Need for Testing.
ii) Delay Fault Testing with example.
iii) Design strategies for Test.

CODE No.:10BT60503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

DATA WAREHOUSING AND DATA MINING

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define Data Warehouse and write how it differs from databases.
b) Write brief notes on multi-dimensional model.
c) Explain three tier data warehouse architecture.

2. a) "Data mining as a confluence of multiple disciplines." Discuss.
b) Discuss mining methodology and user interaction issues.

3. a) Normalize the data : 200, 300, 400, 600 and 1000 using
i) Min-max normalization by setting min=0 and max =1.
ii) z-score normalization
b) Illustrate data transformation techniques with examples.

4. a) Write a priori algorithm.
b) Apply a priori algorithm to the following transactional data:

TID	T100	T200	T300	T400	T500	T600	T700	T800	T900
Item Ids	i1, i2, i5	i2,i4	i2,i3	i1,i2,i4	i1,i3	i2,i3	i1,i3	i1,i2,i3,i5	i1,i2,i3

5. a) Discuss various ways in which the efficiency of a priori algorithm can be improved.
b) Discuss in detail with examples whenever necessary, the two formats of data for mining frequent itemsets.

6. a) Explain similarity measures for various kinds of data in clustering.
b) Explain at least two hierarchical methods for clustering and write the differences between them.

7. a) What is a time-series database? How to perform similarity search in time-series analysis.
b) Explain data stream query processing.

8. a) Discuss in detail one of the following with a relevant example:
i) data stream mining ii) time series data mining iii) biological data mining
b) Discuss in detail one of the following with a relevant example:
i) text data mining ii) multimedia data mining iii) spatial data mining.

CODE No.:10BT61202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

COMPUTER NETWORKS

[Electronics and Communication Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain about the Fairness and TCP delay modeling in Congestion control.

2. Explain the following with suitable diagram
a) ISM BAND b) VSAT c) PSDN d) QPSK

3. a) Explain the data link layer in the Internet.
b) How Data-link layer is different from Transport layer?

4. a) Outline and discuss the main fields in Ethernet IEEE 802.3 frame. What are the main objectives of preamble?
b) In a LAN, which MAC protocol has a higher efficiency: ALOHA or CSMA-CD? What about in a WAN?

5. Describe the following in detail:
a) Limited contention protocol
b) MACAW

6. a) What is a Forbidden region?
b) Explain the TCP header format with the help of a diagram.

7. a) Write short notes on WWW with suitable diagram.
b) Explain the basic structure of voice over IP.

8. With relevant example, discuss substitution and transposition ciphers.

CODE No.:10BT70101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

REMOTE SENSING AND GIS

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is stereoscopic vision? How is it achieved?
b) Determine the Flying height from a depression which is 0.8 m below from the general ground level. Take focal length equal to 0.162 and photo scale factor is 1: 5000.

2. a) Differentiate Active and Passive Remote Sensing.
b) Describe various components of a typical Remote Sensing System with a neat sketch.

3. a) Discuss in detail EMR interaction with earth surface.
b) Discuss about sensor parameters used in selecting a sensor.

4. a) Explain various components of GIS.
b) Write short notes on GPS.

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) Explain various Neighbourhood Operations used for Raster Data Analysis.
b) What Attribute Data Analysis? Discuss tools used for Attribute Data Analysis.

7. Describe the utility of Remote Sensing and GIS in Rainfall-Runoff modelling of a typical rural watershed.

8. Explain the application of RS-GIS for;
a) Inland water quality survey and management.
b) Bathymetry.

CODE No.:10BT70102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

ENVIRONMENTAL ENGINEERING - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is sewerage system? Classify and discuss their merits and demerits.
b) Define sewage, garbage, rubbish, and grey water.

2. a) What is a manhole in sewerage system? With the help of a neat diagram explain the manhole in sewerage system.
b) Discuss the hydraulic characteristics of a circular sewer section running partially full conditions.

3. a) Differentiate between BOD and COD. Explain the importance of BOD/COD ratio in treatment of wastewater.
b) The 5 day 30°C BOD of sewage sample is 110 mg/*l*. Calculate 5 days 20°C BOD. Assume K_D (20°C) = 0.1.

4. a) Design a grit chamber to remove grit particles of 0.2 mm diameter & specific gravity 2.65. Provide appropriate control section for velocity control. Sketch your design.
b) What do you understand by sedimentation of wastewater? Describe briefly various types of settling tanks.

5. a) Differentiate between attached growth and suspended growth systems giving examples. Explain the underlying principles in each of the system.
b) Explain the working principles of oxidation ponds. Discuss the problems associated with using oxidation ponds.

6. a) Enumerate various methods of "Sludge Thickening" and explain, with help of a sketch a gravity sludge thickener.
b) Write a detailed note on "Nitrogen Removal".

7. Write short notes on the following:
a) Oxygen sag curve.
b) On-land disposal and treatment systems.

8. a) Differentiate between municipal and hazardous solid waste. Explain how you plan for safe disposal of hazardous wastes.
b) Present a flow chart to explain the different steps involved in handling solid wastes in municipal areas. Also, describe the practical problems associated with each of these stages.

CODE No.:10BT70103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

STEEL STRUCTURES - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Design the central cross section of a riveted plate girder for a 20m span simply supported beam carrying a UDL of 50KN/m. Provide minimum three flange plates and design the curtailment of flange plates.

2. A welded plate girder is simply supported over an effective span of 16 m. It carries a UDL of 60 kN/m inclusive of its own weight along with two concentrated loads of 400 kN each at 4 m from either end. Design the plate girder excluding the stiffeners.

3. Design a Pratt roof truss for a factory building for a span of 30m and a pitch of 1/5. The design wind pressure is 1200N/m^2. The trusses are covered with A.C.Sheets and the centre to centre spacing of trusses is 4m. Take f_y = 250N/mm^2 for the steel sections.

4. Four members of a truss are meeting at a particular joint. Two of them are in a straight line, 3m long and carrying a compressive force of 250 KN each. The remaining two ties are orthogonal to each other and equally inclined to the struts. Tension in the Ties is 180 KN. Length of each tie member is 2.85 m. Design the tubular members and the joint.

5. Design a gantry girder to be used in an industrial building for carrying a manually operated overhead crane for the following data:

Crane capacity	= 200kN
Self weight of the crane girder excluding trolley	= 180 kN
Self weight of trolley, electric motor, hook etc.	= 35 kN
Approx. Min. approach of crane hook to gantry girder	= 1.2m
Wheel base	= 3.2m
c/c distance between gantry rails	= 20m
c/c distance between columns	= 8m
Self weight of rail section	= 300 N/m
Diameter of crane wheels	= 150 mm

6. Design the staging of a steel water tank of 20 m height assuming a uniform wind pressure of 1.5 kN/m^2. Size of the tank is 5m x 5mx 4m deep.

7. Design a simply supported composite beam to support the slab of a building 12 m x 27 m with beams spaced at 4.5 m centre to centre. The thickness of the concrete slab is 125 mm, consider a floor finish load of 0.5 kN/ m^2 and live load of 3 kN/ m^2. Grade of concrete M20.

8. a) Differentiate plastic hinge and a mechanical hinge. Sketch the bending stress distribution across the depth of a cross section at plastic hinge.
b) Determine the collapse load for a propped cantilever beam carrying uniformly distributed load throughout the span.

CODE No.:10BT70104

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

TRAFFIC ENGINEERING AND MANAGEMENT

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define the three basic parameters of traffic and explain their inter-relationship.
b) What factors influence the friction offered by a road surface? Explain.

2. a) Indicate how the traffic volume data are presented and the results used in traffic engineering.
b) A series of observations of spot speeds of vehicles was taken. The mean and standard deviation of the sample have been worked out as 39.7 K.P.H. and 6.8 K.P.H. respectively. Give a 95 percent confidence interval for the population mean speed.

3. a) Define Highway Capacity and Service Volume. What factors influence Highway capacity? Explain.
b) What are the types of On-street Parking facilities available? Describe them with the help of neat sketches.

4. a) The traffic flow at an intersection is as shown below. Assuming start-up lost time is 2 seconds, saturation headway is 2.5 seconds, Compute the cycle length and design a two-phase signal. Show the phasing and timing diagrams with a neat sketch.

From	To	Volume (Vehicles/hr)
N	S	1150
S	N	900
E	W	1300
W	E	1800

b) Explain need for co-ordination of signals and illustrate with a time-space diagram**.**

5. Discuss briefly the detrimental effect of air and noise pollution on environment. Explain the necessary measures taken to reduce the effect on environment.

6. a) What are the different types of road signs and what are their specifications? Support your answer with neat sketches and give at least two examples for each type.
b) Discuss about various longitudinal road markings.

7. Discuss about different causes of road accidents, methodology of accident reporting system and road safety strategy to be adopted.

8. a) Discuss about objectives of transportation system management.
b) Briefly discuss about different traffic forecasting techniques.

CODE No.:10BT70107

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

DESIGN AND DRAWING OF IRRIGATION STRUCTURES

[Civil Engineering]

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

Answer any ONE question
All questions carry equal marks

1. Design a canal drop of 2 meters with the following data :

HYDRAULIC PARTICULARS OF CANAL ABOVE DROP

Full supply discharge = 4 cubic meters/ second.
Bed width is 6.00 meters.
Bed level is +20.00.
Full supply depth : 1.50 meters.
F.S.L + 21.50.
Top of bank 2.00 meters wide at level +22.50.
Half supply depth: 1.00 meter.

HYDRAULIC PARTICULARS OF CANAL BELOW DROP

Full Supply discharge = 4 cubic meters / second.
Bed width = 6.00 meters.
Bed Level = +18.00.
Full supply depth: 1.50 meters.
F.S.L. +1 9.50.
Top of bank 2.00 meters wide at level +20.50.
The ground level at the site of work is +20.50.
Good soil is available for foundations at +18.50.

Draw the Plan (half at top and half at foundation level) and longitudinal section.

2. Design a Trapezoidal Notch type canal drop of 2meters with the data given below.

Above drop: Canal hydraulic particulars:

Full supply discharge = 5 m^3/s.
Bed width = 7 meters.
Bed level = +110.00.
Full supply depth = 1.50 meters.
F.S.L = +111.50.
Top of bank = 2.00 meters.
Wide at level = +112.50 meters.
Half supply depth is 1 meter.

Bellow drop: Canal hydraulic particulars:

Full supply discharge = 5 m^3/s.
Bed width = 7 meters.
Bed level = +108.00
Full supply depth = 1.50 meters.
F.S.L = +109.50
Top of bank = 2.00 meters.
Wide at level = +110.50 meters.
Half supply depth is 1 meter.
Ground level at site of work is +110.50 meters.
Good soil is available for foundations at +108.50.

Draw the plan (half at top and half at foundation level) and longitudinal section of the canal drop, to a suitable scale.

CODE No.:10BT70111

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

GROUND IMPROVEMENT TECHNIQUES

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the need and objectives of ground improvement.
b) Discuss the different methods of ground modification along with their suitability for different soils.

2. a) Describe the blasting technique of densifying the soil with consequential problems.
b) Discuss different methods of in-situ densification in granular soils.

3. a) Distinguish between sand drains and wick drains techniques.
b) Discuss the thermal methods of densifying cohesive soils.

4. a) What is grouting and its functions?
b) Describe the principle and application of soil-bituminous stabilization.

5. A retaining wall with geotextile reinforcement is 6 m high. The following data is given as;
Backfill : $\gamma_1 = 19\ kN/m^3$, $\phi'_1 = 34^o$;
Reinforcement : Ultimate tensile strength of geotextile is 40 kN/m.
For the design of the wall, determine vertical spacing, number of layers, total length and lap length of the geotextiles. Use $FS_{(Breaking)} = FS_{(Pullout)} = 1.5$.

6. a) Enumerate the construction of reinforced earth structure.
b) What are the factors governing the design of reinforced earth walls?

7. a) Explain various types of geosynthetics.
b) Discuss the functions of geotextiles.

8. Write short notes on:
i) Reinforcement in slope stability.
ii) Ground anchors.
iii) Soil nailing.

CODE No.:10BT70201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

SWITCHGEAR AND PROTECTION

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Distinguish between symmetrical and unsymmetrical faults occurring on a power system. Draw the sequence-networks for the following types of faults at the terminals of an unloaded generator:
i) Three-phase short circuit ii) single line-to-ground fault.
b) A 3Φ, 10,000 kVA, 11kV alternator has a sub transient reactance of 8%. A 3-Phase short circuit occurs at its terminals. Determine the fault current and fault MVA.

2. Explain the terms recovery voltage, restriking voltage and RRRV. Derive the expression for the restriking voltage interms of system capacitance and inductance.

3. a) What are the advantages of induction cup relays over induction disc relays? What is the purpose of shading in an induction disc relay?
b) What is the difference between fuse and relay?

4. What do you understand by amplitude comparator and phase comparator? Prove the duality between them with the help of phasor diagrams.

5. a) Enumerate main features of a good protection system? Explain the working of Mertz price protection scheme for a 3Φ alternator. Draw a neat sketch in support of your answer.
b) A 13.8k V, 125 MVA, star connected alternator has a synchronous reactance of 1.4 pu/phase and a negligible resistance. It is protected by a Mertz-price balanced current system which operates when out of balance current exceeds 10% of the full load current. If the neutral point is earthed through a resistance of 2Ω, determine what proportion of winding is protected against earth fault.

6. a) Explain a scheme of protection for ring mains.
b) What are the requirements of protection of lines?

7. a) Discuss the following types of earthing:
i) Voltage transformer earthing ii) Using inter connected star earthing transformer.
b) Define the following terms:
i) Earth electrode ii) Earth resistance iii) Earthing lead.

8. a) What is lightning and describe the mechanism of lightning discharge?
b) Why is insulation co-ordination needed in a large power system and what is meant by Basis Impulse Level (BIL) of equipment?

CODE No.:10BT70202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

POWER SYSTEM OPERATION AND CONTROL

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is an incremental fuel cost? How is it used in thermal plant operation?
b) Name the components of production cost and explain.

2. a) Assuming any relevant data and notation, derive the transmission loss formula.
b) Discuss about the optimum allocation of generators without line losses.

3. Determine the daily water used by hydro plant and daily operating cost of thermal plant with the load connected for total 24 hrs from the given data.

The load connected, PD = 400MW
Generation of thermal plant, PGT = 200MW
Generation of hydro plant, PGH = 300MW.

4. a) Discuss the effect of mathematical model of **speed -governing** system.
b) Derive state space second order mathematical model of synchronous machine.

5. Explain the dynamic response of load frequency control of an isolated power system with a neat block diagram. Draw the plots of change in frequency with respect to time with and without making approximations in the analysis.

6. a) Show how the steady state error of frequency in a typical LFC of a power system is reduced to zero using appropriate controller.
b) Two areas of a power system network are interconnected by a tie-line, whose capacity is 500 MW, operating at a power angle of 35. If each area has a capacity of 5000 MW and the equal speed regulation of 3Hz/pu MW, determine the tie line power deviation for step change in load of 85 MW occurs in one of the areas. Assume that both areas have the same inertia constants of H = 4 sec.

7. a) Explain the advantages and disadvantages of different types of compensating equipment for transmission system.
b) What is load compensation? Discuss its objectives in power system.

8. a) Explain the need for power system deregulation.
b) Briefly Discuss about the restructuring power system.

CODE No.:10BT70203

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations November - 2015

POWER SYSTEM ANALYSIS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain the Algorithm for the formulation of Y-Bus- Matrix.

2. Write and explain step by step procedure to form Z-Bus Matrix.

3. In the power system network shown in Fig. 1, bus 1 is a slack bus with $V_1 = 1.0\angle 0^0\ pu$ and bus 2 is a load bus with $S_2 = 280\ MW + j60M$ var. The line impedance on a base of 100 MVA is $Z = 0.02 + j0.04\ pu.$

a) Using Gauss-Seidel method, determine V_2 . Use an initial estimate of $V_2^{(0)} = 1.0 + j0.0$ and perform four iterations.

b) If after several iterations voltage at bus 2 converges to $V_2 = 0.90 - j0.10$, determine S_1 and the real and reactive power loss in the line.

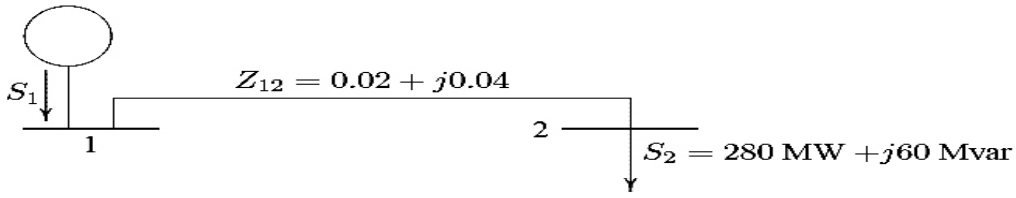


Fig. 1

4. In the two-bus system shown in Fig. 2, bus 1 is a slack bus with $V_1 = 1.0\angle 0^0\ pu$. A load of 100 MW and 50 Mvar is taken from bus 2. The line impedance is $Z_{12} = 0.12 + j0.16$ pu on a base of 100 MVA. Using Newton-Raphson method, obtain the voltage magnitude and phase angle of bus 2. Perform two iterations with an initial estimate of $|V_2|^{(0)} = 1.0\,pu\ and\ \delta_2^{(0)} = 0^0$.

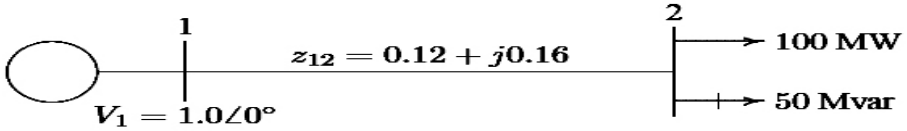


Fig. 2

5. a) Write the performance equation of a three-phase network element in impedance form.
b) Obtain $\mathbf{Z_{pq}}^{0,1,2}$ for a stationary element, using symmetrical components.

6. a) Define the terms: Stability, Steady State Stability, Dynamic Stability and Transient Stability.
b) Find the steady state stability limit of a system consisting of a generator of equivalent reactance of 0.5 p.u. connected to an infinite bus through a series reactance of 1.0 p.u. The terminal voltage of the generator is held at 1.2 p.u. and voltage of infinite bus is 1.0 p.u.

7. Define Steady State Stability. Consider a simple power system and obtain its steady state stability Limit.

8. Explain the concept of equal area criterion. Define Critical clearing angle and Critical clearing time. Derive an expression for the critical clearing angle, if a 3 phase fault occurs at midpoint of the one of the parallel lines of a double circuit line.

❀ ❀ ❀

CODE No.:10BT70204

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

FLEXIBLE AC TRANSMISSION

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain with neat sketch power flow in Meshed System.
b) What are the factors limits the loading capability?

2. a) What are the benefits of FACTS controllers?
b) Write short notes on reactive power control.

3. a) Explain the Transformer connection for 12 Pulse operation of Voltage Source Converter.
b) Explain the Principle of SVC.

4. Write short notes on the following:
i) Voltage instability prevention using shunt compensation.
ii) Mid-point voltage regulation using shunt compensation.

5. Explain briefly the variable impedance type static VAR generators.

6. a) Explain about SVC and STATCOM with reference to flexible AC Transmission System.
b) Explain the regulation and slow transfer function of SVC.

7. Describe the capabilities of series compensation to improve trans & stability and Power oscillation damping.

8. What is TCSC? Explain the operation of TCSC. Discuss how it will improve the system stability.

CODE No.:10BT70301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

MANUFACTURING SYSTEMS DESIGN

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Prepare comprehensive terms on the history on evolution of manufacturing system.
b) Explain how a Manufacturing system is converted into Mathematical models.

2. Explain about a single station automated cell.

3. a) Explain the manufacturing lead time with the help of mathematical formula.
b) Explain the Work-In-Process (WIP) inventory in manufacturing system.

4. Discuss the types of Automated Guided Vehicles (AGV).

5. Explain the method of determining the machine cells the rank order clustering.

6. What are the functions of the material handling and storage systems? Explain in detail.

7. What is a design constraint? Explain different constraint surfaces in two dimensional design space.

8. What do you understand by simulation? What are the different types of simulation models? Explain any one of them.

CODE No.:10BT70302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

INDUSTRIAL AUTOMATION AND ROBOTICS

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain basic elements of an automated system.
b) Discuss different types of automation.

2. a) Briefly explain part transfer methods and mechanisms.
b) What is qualitative analysis?

3. a) Describe about various ways of improving line balance.
b) Explain about various elements of the parts delivery system.

4. Explain different types of grippers and joints used in robots with neat sketches.

5. a) What is homogenous transformation matrix? Explain.
b) Find the rotation matrix representing a roll of 45° followed by a yaw of 90° followed by a pitch of 90°.

6. a) Explain various terms involved in trajectory planning.
b) Explain robot language operating system with neat sketch.

7. a) What are the different types of actuators used for robots? List the advantages and disadvantages of each.
b) Distinguish between tactile and non-tactile sensors with examples for robots.

8. a) What is the need of robots in arc welding process? Explain the salient features of arc welding robot.
b) Explain pick and place operations of a robot.

CODE No.:10BT70303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

FINITE ELEMENT METHODS

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Write the stress equilibrium equations, if the stresses acting on the elemental volume dv are $\boldsymbol{\sigma = [\sigma_x, \sigma_y, \sigma_z, \tau_{xy}, \tau_{yz}, \tau_{zx}]^T}$ and the distributed force per unit volume, vector $\mathbf{f = [f_x, f_y, f_z]^T}$

b) Consider the rod shown in the Fig.1, where the strain at any point x is given by $\boldsymbol{\varepsilon_x = 1+2x^2}$. Find the tip displacement δ.

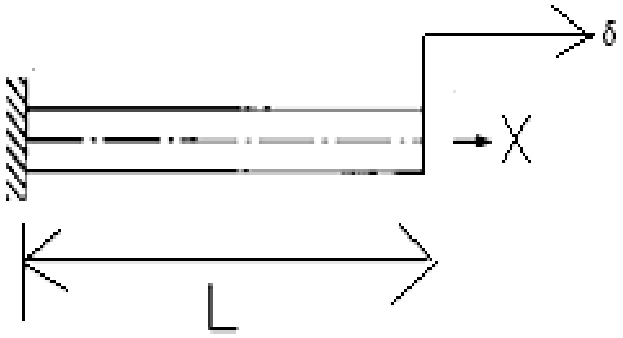


Fig. 1

2. Determine:

a) Nodal deflections

b) Stresses in each member

c) Reactions at the supports, For the member shown in the Fig.2 Given that, $\mathbf{E_1 = 2 \times 10^5}$ **Mpa,** $\mathbf{E_2 = 1 \times 10^5}$ **MPa and P = 1000 N**

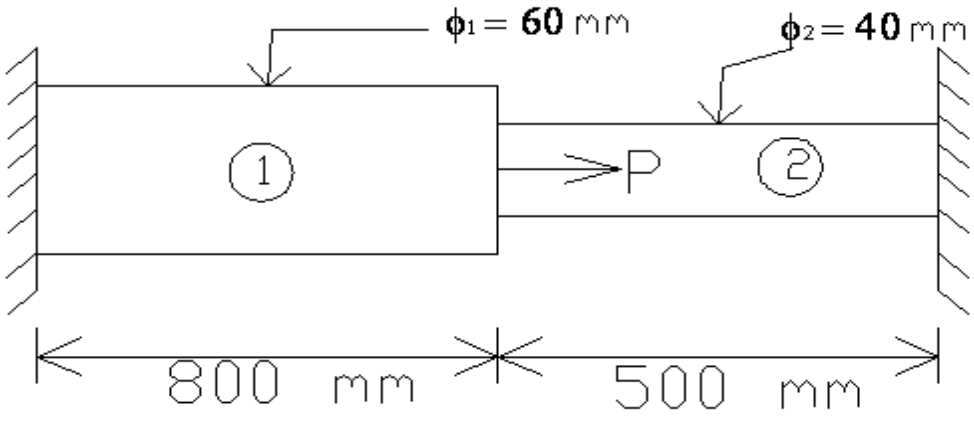


Fig.2

3. A cantilever beam of length 3.4 m has an elastic spring support of stiffness 230 kN/m at its free end, where a point load of 13kN acts. Take Young's modulus as 200 GPa and area moment of inertia of the cross-section as $\mathbf{1 \times 10^{-4}\ m^4}$. Determine the displacement and slope at the node and reactions.

4. For the two dimensional loaded plate shown in Fig 3 determine the displacement of node 1 and node 2 and the elemental stresses using plate stress conditions. Body forces may be neglected in comparison with the external forces.

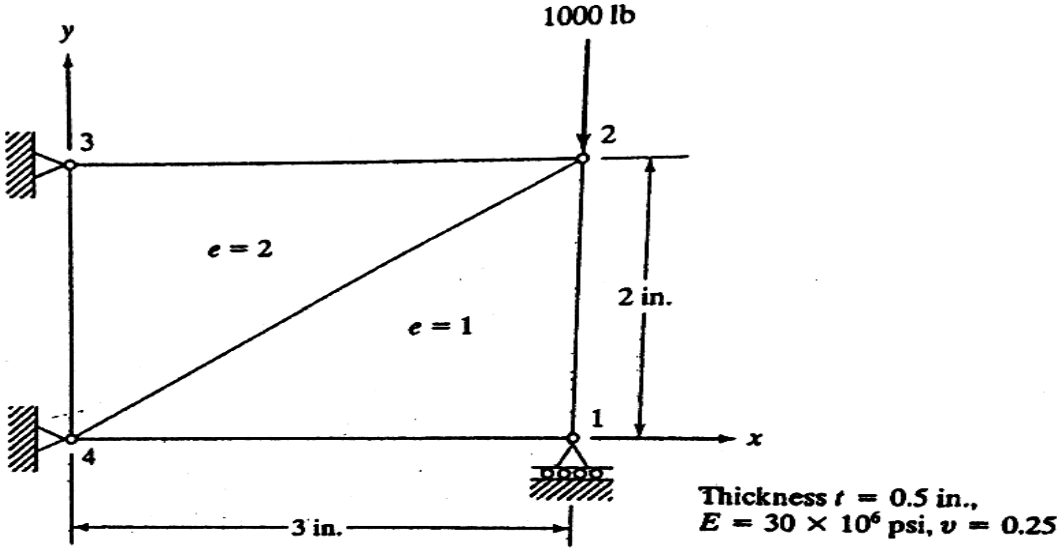


Fig. 3

5. Consider a isoperimetric axisymmetric two dimensional finite element shown in fig.4

a) Construct the Jacobian matrix J.

b) Give an analytical expression of column in the strain displacement matrix B(r, s) that corresponds to the displacement $\mathbf{u}_1$.

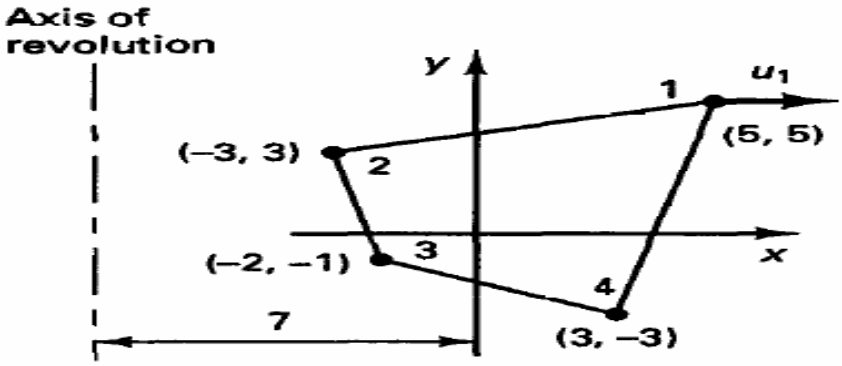


Fig. 4

6. A composite wall consists of three materials, as shown in the Fig. 5. The outer temperature is $T_0 = 20^0$ C. Convection heat transfer takes place on the inner surface of the wall with $T_\infty = 800^0$C and h=25W/m^2 ^{0}C. Determine the temperature distribution, if K_1 = 20 W/m ^{0}C, K_2 = 30 W/m ^{0}C, K_3 = 50 W/m ^{0}C.

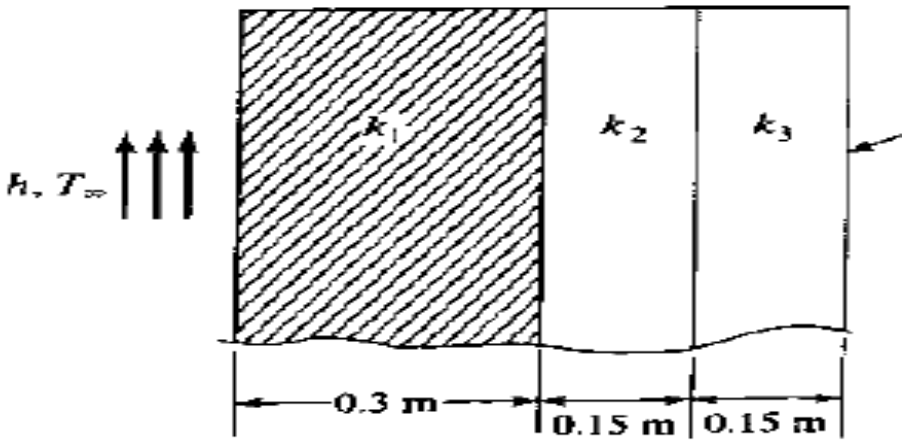


Fig. 5

7. Consider the uniform ideal flow as shown in Fig. 6. Use the four triangular elements shown to compute the stream function and derive the velocity component. Note that in this case, if you do not as fixed surfaces. The coordinates obtain a uniform floe field; you have made error in either your formulation or your calculation. The horizontal boundaries are taken of node 3 are (1.5, 1).

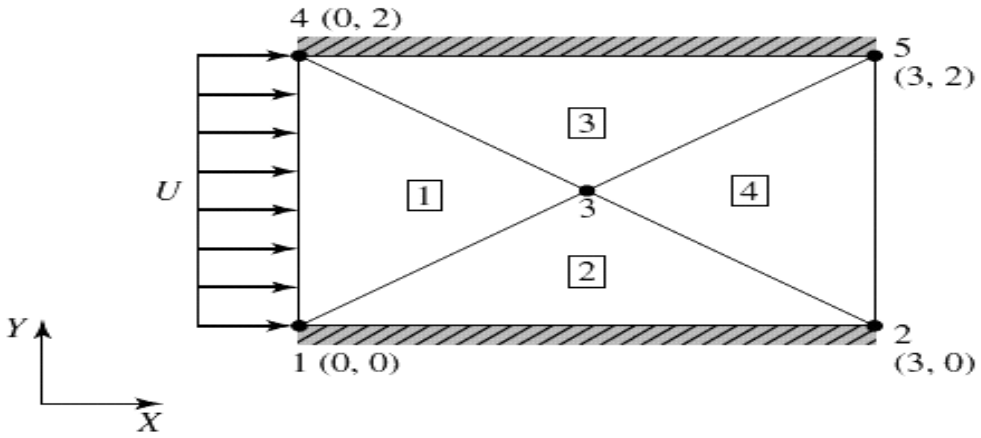


Fig. 6

8. Consider three degree of freedom system shown in Fig. 7, Determine natural frequencies, modal amplitude vector and the steady state response of the system when downward force $\mathbf{F=F_0 \sin \omega_f t}$ is applied to mass 2.

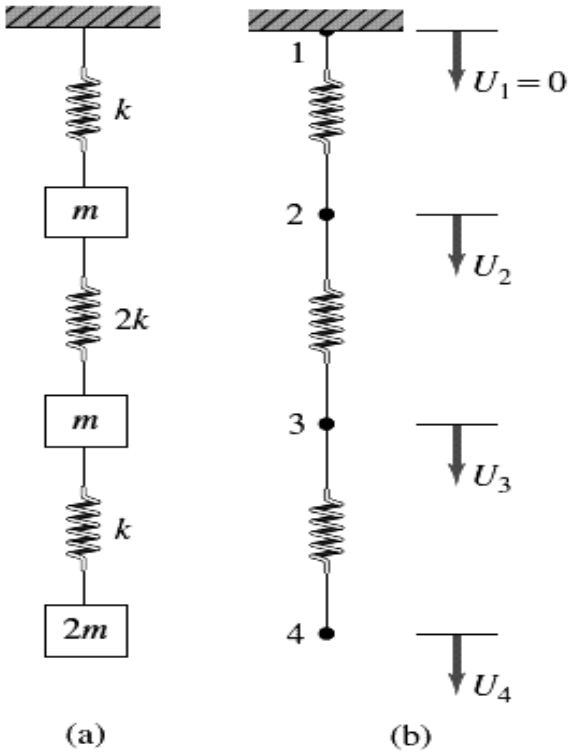


Fig. 7

CODE No.:10BT70304

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

PRODUCTION AND OPERATIONS MANAGEMENT

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the various phases in the study of operation management explain with a suitable example?
b) Describe the history of production management.

2. a) What are the different types of forecasting?
b) A health services provider needs to estimate the demand for a certain type of service on a weekly basis. This information is important for planning manpower allocation decisions. Table 1 has data on the demand for the services in the last 6 weeks. The organization is currently using an exponential smoothening model with an alpha value of 0.25.

Table 1: Data on demand for services in six weeks.

Week	Demand
Week 1	60
Week 2	85
Week 3	120
Week 4	90
Week 5	100
Week 6	80

Demonstrate the usefulness of the focus forecasting technology (exponential smoothening) by forecasting the demand during weeks 2 to 5.

3. a) What do you mean by hierarchical production planning? Are there any benefits in this exercise? With the help of an example, demonstrate hierarchical production planning.
b) Briefly explain aggregate production planning. Discuss any one method. Also state the advantages and disadvantages of it.

4. a) Distinguish between MRP and JIT philosophies.
b) Describe the MRP process, including netting, exposing and time phasing.
c) What are the assumptions of MRP and how are they being relaxed with new technology.

5. A student of a university has five term papers due soon and he must decide in what order to complete them. Below are the estimated number of days required to complete each paper and due dates.

Course	Estimated Time(days)	Due date
History	3.5	7
Finance	3.5	8
POM	6.0	12
Accounting	4.5	17
math	2.5	16

a) Use the Shortest Processing Time rule to sequence the jobs. Compute average flow time and average tardiness per job using this sequence.
b) Use Earliest Due Date rule to sequence the jobs. Compute average flow time and average tardiness per job using this sequence.

6. A firm has several items of inventory. The average numbers of each of these items as well as their unit costs are listed below:

Item	Average No. of Units in inventory	Average cost per unit (Rs.)
1	4000	1.96
2	200	10.00
3	440	2.40
4	2000	16.80
5	20	165.00
6	200	6.00
7	160	76.00
8	3000	3.00
9	1200	1.90
10	6000	0.50

The firm wishes to adopt ABC inventory system. How should the items be classified into A, B and C?

7. a) What are the different measures of Supply Chain performance? Explain.
b) Discuss the role of Information Technology in Supply Chain Management.

8. a) What are the differences between continuous improvement and radical improvement? What are your recommendations to manufacturing organizations for improving their performance?
b) Explain the relationship between Lean manufacturing and JIT manufacturing.

CODE No.:10BT70306

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations November - 2015

TOOL DESIGN

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain ferrous, non ferrous and non metallic type materials used for tooling.

2. a) Discuss the nomenclature of single point cutting tools.
b) While turning a C15 steel rod of 160 mm diameter at 315 rpm, 2.5 mm depth of cut and feed rate of 0.16 mm/rev by tool geometry 0^0, 10^0, 8^0, 9^0, 15^0, 75^0, 0 (mm) the following observations were made.
Tangential component of the cutting force = 500 N
Arial component of the cutting force = 200 N
Chip thickness = 0.48 mm
i) Draw schematically the Merchants circle diagram for the cutting forces in the present case and
ii) Determine the dynamic yield strength of the present work material.

3. a) Sketch in detail, the geometry and elements of a milling cutter indicating all angles.
b) Explain with neat sketches, the design principle of a HSS twist drill.

4. a) Describe briefly the Principles of Location.
b) Explain the following types of jigs with a neat sketch:
i) Template Jig
ii) Leaf Jig

5. a) Sketch and explain strip layout.
b) Discuss various types of press operations with neat diagrams.

6. a) Explain drawing operations in detail.
b) Write a short note on Drawing dies.

7. a) Explain different tool wear mechanisms.
b) Discuss the effects of tool geometry, feed, depth of cut and cutting speed on tool wear.

8. Explain briefly the construction methods of plastic tooling.

CODE No.:10BT70309

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations November - 2015

POWER PLANT ENGINEERING

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is the present position of power in India? Why India will not face power crisis in future?
b) How much coal, cooling water and combustion air are required for super thermal power station of 500 MW capacity per hour?

2. How are cooling towers classified? Explain any one of them with a neat sketch.

3. a) Why the cooling and cleaning of lubricating oil is necessary? Draw a neat diagram of lubricating system used for medium capacity diesel power plant.
b) What are the methods used for supercharging the diesel engine?

4. a) Make a comparison of gas turbine power plant with diesel engine power plant of same capacity.
b) Write a note on open cycle gas turbine power plant.

5. a) Describe different types of surge tanks. How will you differentiate differential type with that of simple or restricted orifice type?
b) What do you understand by "pump storage plant"? What are the advantages and limitations of this power plant? Where can such schemes are best applied?

6. a) What do you understand by MHD? Explain the working principle of MHD with neat sketches.
b) Explain the working of a thermionic system with neat sketch and explain the effects of those factors which control the power generation capacity.

7. a) Write about the nuclear waste disposal method.
b) Describe the boiling water reactor with the help of neat sketch.

8. (a) Explain :
i) Load factor.
ii) Demand factor.
b) A power plant has the installed capacity of 120 MW. Calculate the cost of generation, if capital cost = Rs. 120×10^6, rate of interest and depreciation =18% , annual cost of fuel oil, salaries and taxation = Rs. 25×10^6, load factor=40%.

CODE No.:10BT70401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

ELECTRONIC MEASUREMENTS AND INSTRUMENTATION

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define Static Sensitivity, Resolution and Relative Limiting Error. What are Guarantee Errors?
b) What are the features of AC voltmeters and explain its working for Multi range purpose?

2. a) Explain the method of producing square waves in a function generator. How it differs with a sine wave generator.
b) Differentiate between a function generator and pulse and square wave generator.

3. a) Explain in detail the frequency selective wave analyzer.
b) With block diagram, explain the working of a Digital Fourier analyzer and state its applications.

4. a) Explain in detail the principle of operation of single beam CRO.
b) Explain the use of CRO for frequency measurement.

5. a) Give the special features of the typical stages in a high frequency CRO.
b) Explain the digital measurement of Phase.

6. a) Explain with a diagram, the operation of a wheatstone bridge. State the limitations of the wheatstone bridge. How it can overcome?
b) Explain any two noise reduction techniques that are used in instrumentation.

7. a) Explain in detail the working of a LVDT.
b) With a neat diagram, explain the working of Thermocouple.

8. a) Explain briefly the instruments that are used in computer controlled instrumentation.
b) Explain the procedure for testing a Radio Receiver by using computer controller.

CODE No.:10BT70402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

DIGITAL IMAGE PROCESSING

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Distinguish between Binary Image, Gray Scale Image and Digital Image.
b) Discuss in brief some basic relationships between pixels.

2. a) Compare DCT and DFT techniques.
b) Check whether DFT (N=4) is unitary or not.
c) Explain the significance of image transforms in image processing.

3. Write short notes:
a) High-boost filtering
b) Unsharp Masking
c) Median Filter

4. a) Explain the procedure of filtering the image in the frequency domain.
b) Explain how image smoothing can be achieved using any one of the frequency domain filters.

5. a) What is meant by Noise in an image? Discuss some important Probability density functions.
b) Differentiate between enhancement and restoration processes. Present the restoration technique employing inverse filter.

6. a) Explain how the gradient is used for edge detection.
b) What is meant by thresholding? Discuss about basic adaptive thresholding.

7. a) What is meant by Error-free compression? Discuss about Variable-length coding and Huffman coding.
b) What is meant by lossy compression? Discuss about transform coding.

8. a) Explain about RGB and CMY color models.
b) Discuss about color segmentation process.

CODE No.:10BT70405

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations October - 2015

EMBEDDED AND REALTIME SYSTEMS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Give some examples for small scale Embedded Systems, medium scale Embedded Systems and sophisticated Embedded Systems.
b) When is Application Specific System Processors (ASSPs) used in an Embedded System? Discuss.

2. a) Explain the concept of pipelining relevant to general purpose processors used in an Embedded System design.
b) Write notes on application specific instruction-set processors.

3. a) Describe the data flow model with relevant example.
b) Elaborate the implementation procedure of an Embedded System using state machine and concurrent process models.

4. a) What is meant by communication interface? Explain the need for communication interfaces.
b) Illustrate with suitable example how to utilize Ethernet as a communication interface.

5. a) Explain the use of semaphores for the critical sections of a Task.
b) Write notes on Task and Task States.

6. a) Explain Queue related functions.
b) Explain multitask and their functions in Embedded System.

7. a) Enumerate various operating modes of ARM.
b) What is THUMB? How does the THUMB instruction set differ from ARM instruction set? Explain how the THUMB instructions are initiated in program.

8. Explain the following related to Embedded System design technology.
a) Behavioral Synthesis
b) Hardware/Software co-verification

CODE No.:10BT70407

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular Examinations November - 2015

OPTICAL COMMUNICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the advantages of optical communication systems.
b) Write and discuss the important fiber parameters, which determine the suitability of application of an optical fiber for a suitable fiber optic communication.

2. a) Explain linear scattering loss in optical fibers with regard to Rayleigh scattering.
b) Explain how optical fibers are suffered from radiation losses at bends or curves on their paths.

3. a) Describe the Scattering, Core and Cladding losses
b) Discuss the overall fiber dispersion in multi mode and single mode fibers.

4. a) What are the general requirements for a source in optical fiber communications?
b) A lens coupled surface emitting LED launches 190 μW of optical power into a multimode step index fiber when a forward current of 25 mA is flowing through the device. Determine the overall power conversion efficiency when the corresponding forward voltage across the diode is 1.5 V.
c) What are the advantages and drawbacks of the LED in comparison with the Injection LASER for use as a optical source for communication?

5. a) Explain Electric arc fusion Splicing process to join two optical fibers.
b) What are the different types of optical fiber couplers? Explain how power transfer takes place with them?

6. a) Explain the criteria which define the important performance and compatibility requirements of optical detectors.
b) Explain the principle of operation of **p-i-n** photodiode.

7. Draw the optical power loss model for a point to point link and explain how to calculate link power budget.

8. Write short notes on the following:
i) Phased Array-based Devices
ii) Fiber Grating Filters

CODE No.:10BT70421

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations November - 2015

ADVANCED MICROPROCESSOR AND MICRO CONTROLLERS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Draw and discuss the register organization of 80286.
b) What are the different interrupts available in 80286?

2. a) Explain the physical address formation in PVAM of 80386.
b) Draw and discuss the flag registers of 80486.

3. a) Describe the organization and interface of the 64-bit wide Pentium memory system and its variations.
b) Write the improvements in Pentium Pro when compared with the Pentium.

4. a) Draw and explain the Architecture of the Pentium IV.
b) Write short notes on Dual-core Microprocessors.

5. a) What is program memory and explain purpose of program memory in microcontrollers?
b) What is watch-dog timer and how will you set the watch dog timer to restart the processor at every 2 ms?

6. a) Explain Logical Instructions with examples.
b) Explain JUMP and CALL Instructions.

7. a) Describe the concepts of Interrupt intervals, Interrupt density and Interrupt constraints.
b) Explain the usage of input and output capture registers with free running counters for real time control.

8. a) Explain Programmable Timers in 80196.
b) Explain about Barrel Shifter and its operation for data processing Instructions.

CODE No.:10BT70501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

PRINCIPLES OF COMPILER DESIGN

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Write a procedure for the construction of NFA from a regular expression.
b) Construct the minimum state DFA for the regular expression **(a|b)*a(a|b).**

2. a) Eliminate left recursion and construct a predictive parsing table for the grammar:
E → E * T | T
T → T + F | F
F → (E) | id
b) Write an algorithm for operator-precedence parsing.

3. a) Construct the SLR parsing table for the following grammar:
E → E + E | E * E | (E) | E / E | id
b) Construct LALR parsing table for the grammar
S' → S
S → C C
C → c C | d

4. a) Distinguish between a parse tree and a syntax tree.
b) Write SDT to generate three address code for arithmetic statements.

5. a) What is the difference between name equivalence and structure equivalence?
b) Write briefly about overloading of functions and operators.

6. a) Translate the arithmetic expression **a * - (b + c)** in to:
i) A syntax tree ii) Postfix notation iii) three-address code
b) Discuss on type checking in intermediate code generation.

7. a) Compare and explain syntax tree and DAG with an example.
b) Explain basic blocks and flow graphs with suitable examples.

8. Describe various Register allocation optimization techniques with an example.

CODE No.:10BT70502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

SOFTWARE TESTING TECHNIQUES

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain taxonomy of testing in detail.
b) Explain some dichotomies of testing.

2. a) Explain path instrumentation detail.
b) What is Predicate? Explain path predicate in detail with an example.

3. What is Transaction -Flow Testing? How it is Different from Data- Flow Testing?

4. Explain and write about Nice and Ugly Domains.

5. Write short notes:
a) Path Products
b) Loops
c) Cross-term
d) Absorption rule

6. What is Logic Based Testing? What is the role of Decision Tables in Logic Base Testing?

7. What are the Test Design Strategies for State Graph based Testing? Explain.

8. a) Discuss about node reduction algorithm with a suitable example.
b) Give reasons, why 2-dimensional array representation is not convenient for larger graphs.

CODE No.:10BT71001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

ANALYTICAL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) With neat schematic explain Null detector type pH meter.
b) Draw and explain the method which measures conductivity by measuring resistance of the solution.

2. a) What is the principle of NO_x analyzer? Explain its working.
b) Explain about different types of thermal conductivity gas analysers.

3. a) With neat sketches, explain in detail Photo Ionization Detector is used in Gas chromatography.
b) With neat sketches, explain with detail Electron Capture Detector used in Gas chromatography.

4. a) Explain the working of a magnetic wind type oxygen analyzer.
b) Discuss in detail the sampling system associated with oxygen analyzers.

5. a) Explain about the advantages and disadvantages associated with single and double beam spectrometer.
b) What is the requirement of chopper in spectrometer?

6. a) Discuss the calibration method adopted for IR spectrometer.
b) Give the advantages of FT spectroscopic technique.

7. a) Discuss the principle of Nuclear Magnetic Resonance.
b) Explain the principle of operation of X-ray spectrometer.

8. a) Discuss the functionality of proportional counter.
b) What are the applications of solid state detectors?

CODE No.:10BT71002

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

AUTOMATION OF INDUSTRIAL PROCESSES

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Differentiate supervisory control and direct digital control.
b) Explain the centralized control system with a block diagram.

2. Describe in detail about various types of smart sensors.

3. Describe Zigle-Nicholons closed-loop method of tuning P, PI and PID Controllers.

4. Find the modified Z-Transform of u(t), e^{at}, sin(at), k(t).

5. With a neat block diagram, explain the feed forward control system.

6. For the 2 **x** 2 multivariable system, explain how the relative gain array is calculated.

7. With necessary diagram, explain the architecture of the PLC.

8. With a neat block diagram, explain the hierarchical structure of DCS.

CODE No.:10BT71005

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

MEMS AND MICROSYSTEMS

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are MEMS? Mention any for advantages of MEMS.
b) Give various industrial applications of MEMS.

2. a) Explain the working principle of micro accelerometers.
b) Write a note on thermal sensors.

3. a) Explain how thermal stresses induce in MEMS.
b) Derive how thermal stresses in thin plates and beams induce due to temperature variation.

4. a) Explain in detail about Scaling in Electricity.
b) With velocity profiles, explain about Scaling in Fluid Mechanics.

5. a) Explain the method of preparation of Single Crystal Silicon Ingots.
b) On what factors the choice of wafer depends?

6. a) Write a short note on photo lithography.
b) After photo resist deposition, a mask as shown in Fig. 1 is used for exposing a pattern. After the exposure, using a Etch process, the silicon substrate is etched. Draw the pattern on the silicon when exposed using a positive photo resist and a negative resist.

Fig. 1: Masked used in the process.

7. a) What is the importance of Etch Stop in fabrication of MEMS? Explain about Electrochemical Etch Stop using suitable diagram.
b) Differentiate Bulk micromachining with Surface micromaching.

8. a) With suitable diagrams, explain three levels of packaging.
b) Discuss various problems encounter at the biomedical and optical interfaces.

CODE No.:10BT71201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

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 different types of CSS with an example.

2. a) Write a JavaScript to generate and display random numbers.
b) Explain about Arrays and write a JavaScript to sort list of strings.

3. a) What are the benefits and drawbacks of using XML namespaces?
b) Construct a sample XML web page.

4. Explain about cookies and session tracking with an example.

5. a) Explain the **PreparedStatement** and **ResultSet** classes of **java.sql** package.
b) Write a program to establish a connection to the database.

6. What is MVC design model? Explain the role of MVC in a JSP scenario.

7. Explain about getter and setter methods with an example in JavaBeans.

8. Write a short notes on:
a) JSP Standard Tag Library.
b) Cascading Style Sheets.

CODE No.:10BT71202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

MOBILE COMPUTING

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss the Mobile computing architectural layers with a neat block diagram.
b) Write a brief note on,
i) GSM Localization ii) Handover

2. a) What is the effect of hidden and exposed terminals in MAC?
b) Explain about SDMA and FDMA.

3. a) Explain the protocol architecture of 802**.**11
b) Explain L2CAP protocol used in Bluetooth.

4. Discuss in detail about;
a) Selective Retransmission b) Transaction oriented TCP.

5. a) What are the problems of cache in real life? Which type of contents causes problems?
b) Write about transactional models.

6. Explain in detail about pull based mechanisms.

7. Compare the various improvements on TCP's performance in wireless and mobile environment.

8. Write short notes on:
i) RFID ii) J2ME

CODE No.:10BT71203

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

MULTIMEDIA AND APPLICATIONS DEVELOPMENT

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Write notes on color models in videos.
b) Distinguish between media, multimedia and hypermedia.

2. a) Explain the color models in video.
b) What are the advantages of digital representation for video? Explain CCIR standards for Digital Video.

3. Explain about Constructor Functions. Give example.

4. a) Explain about Polymorphism and dynamic binding of Action Script.
b) Explain about nested Exceptions. Give Example.

5. Explain OOPs action development using components of action script 2.0.

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. a) Explain about Quality of Multimedia Data Transmission.
b) Explain about Media on Demand.

CODE No.:10BT71204

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

CRYPTOGRAPHY AND NETWORK SECURITY

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain about Masquerade and denial of service.
b) Explain about Network access security model.

2. a) Explain the different approaches of key distribution for message authentication.
b) Mention the different modes of operation of DES. Discuss any one of them.

3. a) Discuss RSA algorithm for encryption with an example.
b) Give the format of Certificate Revocation list and explain.

4. a) Explain the authentication and confidentiality services of PGP.
b) What are the functions of S/MIME?

5. a) Explain Oakley key determination protocol.
b) What IPSec services are provided by AH and ESP?

6. a) Explain about SSL record protocol operation.
b) Explain about SSL handshake protocol.

7. a) Explain about Rule based Intrusion Detection.
b) Explain about Intrusion Detection Techniques.

8. a) With neat diagrams, explain the differences between application-level gateway and circuit -level gateway.
b) "*One way to secure against Trojan horse attacks is the use of a secure, trusted OS*". Explain.

CODE No.:10BT71208

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

SOFTWARE PROJECT MANAGEMENT

[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. What are the disadvantages of water fall model? How do you eliminate them?

2. What are the ways of achieving better economics in software? Explain with examples.

3. a) Explain Construction phase and Transition phase of life-cycle process.
b) Describe the following artifact sets.
i) Implementation Set
ii) Deployment Set

4. a) Describe all architecture views in detail.
b) Differentiate between iterations and increments with an example of a simple development life cycle.

5. a) Briefly explain the purpose of each of the sections in a software project plan.
b) What is the critical distinction between a milestone and deliverability?

6. Define and discuss about configuration baseline. How will this process the performance?

7. a) What is Software Change Order? Explain with an example.
b) Define Process Maturity level of a development organization. How does it affect the product life-cycle?

8. a) What are top 10 software management principles?
b) Explain people factors of CCPDS-R.

CODE No.:10BT71222

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

SOFTWARE ARCHITECTURE

[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. Define Software Architecture. Write the features which make a Good Architecture for Software.

2. Define Process Control. Explain Process Control Paradigms.

3. How database is integrated? Explain with a dataflow diagram for interactive database architecture.

4. Explain the features of user interface architectures.

5. Explain different types of architectural patterns.

6. Write short notes on:
   i) Architectural Styles.
   ii) Architectural Design Space.

7. a) What is ADL? Why to choose ADL in System Development?
   b) Write about Applications of ADL.

8. a) How can assets of organization be reused?
   b) How to evaluate a product time?

CODE No.:10BT71301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

NEURAL NETWORKS AND FUZZY SYSTEMS

[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) Give a brief account on biological and artificial neural models.
b) Draw McCulloch - Pitt's neuron model and explain in detail.

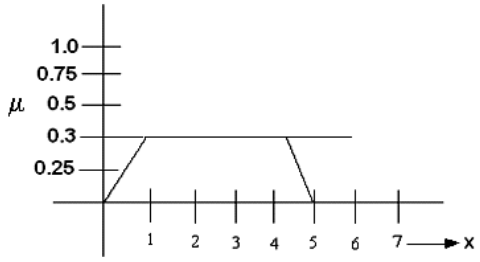
2. a) Explain why single layer Perceptron Network could not solve even Ex-OR problem.
b) Explain the architecture of Kohonen's self organizing map network.

3. a) Explain the Hopfield network algorithm.
b) Explain about full CPNN.

4. a) What is an Associative memory? Explain different types of Associative memories.
b) Explain BAM training algorithm with a neat sketch.

5. Using your own intuition, and your own definitions of the universe of discourse, plot fuzzy membership functions for the following variables:
a) Weight of people : i) Very light. ii) Light. iii) Average. iv) Heavy. v) Very heavy
b) Age of people : i) Very young. ii) Young. iii) Middle-aged. iv) Old. v) Very old
c) Education of people : i) Fairly educated ii) Educated iii) Highly educated iv) Not highly educated. v) More or less educated

6. a) Mention the need for the defuzzification.
b) Let $\tilde{A}_1, \tilde{A}_2, \tilde{A}_3$ are three fuzzy sets as shown in figure 1, 2, 3., find the defuzzification using centre of sums (COS) method.



$\tilde{A}_1$

Figure: 1

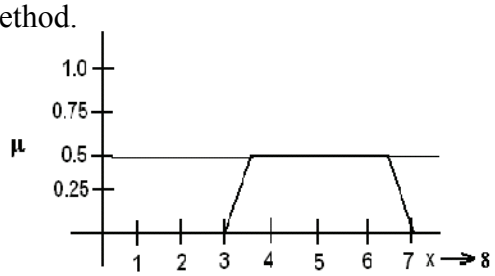


Figure: 2 $\tilde{A}_2$

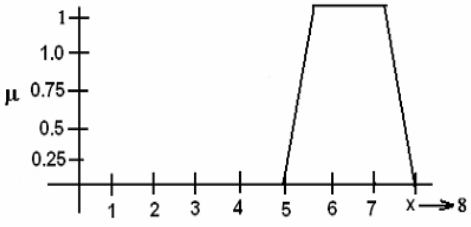


Figure: 3 $\tilde{A}_3$

7. Explain the step-by step procedure in designing of a Fuzzy Logic Controller.

8. a) Explain how ANN is used for load forecasting.
b) Develop a Fuzzy Logic Controller for speed control of any machine.

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CODE No.:10BT71302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

PROGRAMMABLE LOGIC CONTROLLERS

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the advantages and disadvantages of PLC?
b) Explain about PLC input and output Modules.

2. Explain about PLC operational procedures with suitable example.

3. a) Explain the following
i) NAND gate and relay and plc equivalence
ii) NOT gate and relay and plc equivalence
b) Draw a schematic of a ladder diagram for the following sequence
- when sw1 is closed cr1 goes on
- after cr1 goes on,sw2 can turn cr2 on
- when cr2 goes on,pl1 goes off(use nine step planning sequence)

4. a) Explain the typical PLC counter functions.
b) Explain the process where a timed interval is started when a count reaches preset value using a PLC counter.

5. a) Explain the basic comparison function of PLC.
b) Explain the PLC conversion between OCTAL and HEXADECIMAL numbering systems.

6. a) Explain the SKIP function with an application.
b) How do you move blocks of PLC data? Explain different methodologies.

7. Explain about PLC SEQUENCE function with and without TIMING.

8. Explain about PLC 's PID MODULE, PID TUNING and PID FUNCTIONS.

CODE No.:10BT71501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

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) Why do both sockets and XTI provide the interface from the upper three layers of the OSI model into the transport layer?
b) With state transition diagram, explain the concept of TCP Connection Establishment and Termination.

2. a) How do sockets work? List and explain any five socket primitives.
b) Explain the ways used to store the two bytes in a memory with suitable formats.

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) List the differences between Poll and Select function? Explain the functionality provided by Poll function.
b) State and explain in detail the generic socket options.

5. a) Explain Lost Datagram facility of UDP server.
b) Explain the purpose and usage of UDP sockets and their different Functions.

6. a) Write the syntax for
i) gethostbyname ii) gethostbyaddr iii) getservbyname iv) Getservbyport
b) Discuss uname function in detail.

7. a) What is pipe? How FIFO's are different from pipes? Explain with suitable example.
b) Compare the IPC functionality provided by pipes and message queues.

8. a) What is terminal line discipline?
b) Explain RPC.

CODE No.:10BT71502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

SOFT COMPUTING TECHNIQUES

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Differentiate between supervised and unsupervised learning.
b) Implement OR function using Mc-Culloch-Pitts-Neuron model with binary inputs and targets.

2. Write notes on the following optimization techniques
a) Genetic Algorithm (GA).
b) Particle Swarm Optimization (PSO).

3. a) Write short notes on single layer Artificial Neural Network.
b) List applications of Back Propagation.

4. a) Explain Exponential BAM.
b) Write an algorithm for simplified Bi-directional Associative Memory.

5. a) What are the properties that a fuzzy set has to satisfy?
b) Compare crisp sets and fuzzy sets.

6. a) Write a note on predicate logic.
b) Write a note on Fuzzy logic.

7. Construct the Kohonen Self Organization Map to cluster the input vectors [0.2 ,0.4], [0.6, 0.6]. The number of cluster formed is four. The initial learning rates are 0.2 and 0.1 respectively. The weight vectors are given below

$$W_{ij} = [0.3 \quad 0.2 \quad 0.1 \quad 0.8 \quad 0.4$$
$$0.5 \quad 0.6 \quad 0.7 \quad 0.9 \quad 0.2\ ]$$

8. Explain in detail about steps involved decision making with Fuzzy information.

CODE No.:10BT71503

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

ARTIFICIAL INTELLIGENCE

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define Artificial Intelligence. Give any four examples to explain problem formulation for different AI problems.
b) Enumerate Classical "Water jug Problem". Describe the state space for this problem. Solve this problem by giving its opera loss sequence.

2. a) Explain the significance of using heuristic functions with an example.
b) Explain why the process of generating predecessors in backward search does not need to add literals that are negative effects of the action.

3. a) Explain Backward Chaining with an example.
b) Describe in detail the WUMPUS World PEAS.

4. Explain the difference between Forward and Backward reasoning. Under what conditions each would be best to use for given set of problem?

5. a) Explain Mental Events, Mental Objects in detail.
b) Explain Semantic Networks in detail with an example.

6. a) Describe in detail about inference using full joint distributions.
b) Discuss briefly about axioms of probability.

7. a) Explain the concept of learning using decision trees.
b) List and explain various forms of learning.

8. a) What is a simple Artificial Neuron? How Artificial Neurons learns?
b) With a neat diagram, explain in detail about Fuzzy Logic control.

CODE No.:10BT80504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Regular/Supplementary Examinations November - 2015

CLOUD COMPUTING

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Define the term cloud computing. Discuss when to use and when not to use cloud computing.

2. a) Differentiate between Distributed, Grid and Cloud Computing with suitable examples.
b) Explain the architecture of Cloud Computing in detail.

3. What is virtualization? Explain different levels of virtualization.

4. a) Explain briefly storage virtualization in cloud. Illustrate how it differs from other storage techniques.
b) Define Software Virtualization. Explain the benefits of Virtualization for Healthcare provider.

5. What is the need for security in cloud computing? Explain with a case study.

6. Enumerate the process of virtualization.

7. Explain different types of cloud deployment models.

8. Write short notes on the following:
a) Yahoo Hadoop
b) Windows Azure
c) OBIEE

CODE No.:10BT6HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

MANAGEMENT SCIENCE

[Electrical and Electronics 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) Identify different functions of management and explain each one of them with examples.
b) Differentiate between Management and Administration.

2. a) What are the advantages of Centralization and Decentralization? Explain.
b) Write the organization structure of your college. What type of structure is that?

3. a) Define Plant Layout. Compare process and product layouts.
b) What is meant by work measurement? Briefly explain how to determine standard time for the given job.

4. a) Explain the objectives of purchase department. Differentiate centralized and decentralized purchasing.
b) Explain ABC analysis of inventory control indicating the need for it.

5. a) What are the functions of Personal Management?
b) Distinguish between Job Evaluation and Merit Rating.

6. The normal and crash duration with cost for various activities are given below. The indirect cost for the supervision of the work is Rs. 2000/- per week.

Activity	Time(weeks)		Cost (Rs.)	
	Normal	Crash	Normal	Crash
1-2	1	1	5,000	5,000
2-3	3	2	5,000	12,000
2-4	7	4	11,000	17,000
3-4	5	3	10,000	12,000
3-5	8	6	8,500	12,000
4-5	4	2	8,500	16,000
5-6	1	1	5,000	5,000

i) Draw a network diagram for these activities showing critical path and earliest and latest event times on it.
ii) What is the normal duration and total normal cost for the completion of the project?
iii) Crash the relevant activities systematically to bring down the project duration to 11 weeks. What is the total cost then?

7. a) Discuss the opportunities in India for Women Entrepreneurs.
b) Explain the role of Entrepreneurship in Economic development.

8. a) What is meant by Business Process Outsourcing? Also state its need.
b) Explain the concept of Just-In-Time and state its advantages.

CODE No.:10BT40502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

OBJECT ORIENTED PROGRAMMING

[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) Write a C++ program to print upper-left, upper-right, lower-left and lower-right triangle.
b) With a suitable C++ program, differentiate Struct and Class in C++.

2. a) Implement the "Calculator" function using the class hierarchy "Hybrid inheritance".
b) Draw the "is a" and "part of" relationship diagram for an example of your own.

3. a) Differentiate between C++ and JAVA programming languages.
b) What is garbage collection? How it is supported in JAVA?

4. a) Explain use of super with an example.
b) What is method overriding? Briefly explain abstract classes.

5. a) Explain packages in detail.
b) What is termination or resumptive models?

6. a) Write a Java code to create multiple bank accounts and transfer the amount from one account to another using threads.
b) Compare and Contrast synchronized with unsynchronized thread.

7. a) Write a Java program with event handling to show the employee personal information on clicking a button. Also add 5% bonus with salary when another button has been clicked.
b) Draw inheritance diagram for the AWT event hierarchy.

8. Explain with a sample program for the JApplet.

CODE No.:10BT60405

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

VLSI DESIGN

[Electrical and Electronics Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is the Oxidation? Explain thermal oxidation process.
b) Explain the fabrication process steps for Bi-CMOS technology in detail.

2. a) Define Z_{pu} and Z_{pd}.
b) Determine the Z_{pu} to Z_{pd} ratio for an NMOS inverter driven by another NMOS inverter. Discuss the effect of inserting one or more pass transistors between inverters on the Z_{pu} to Z_{pd} ratio.

3. a) Explain CMOS λ-based design rules.
b) Draw stick-diagram and layout for a two-input NMOS NAND gate.

4. a) Derive the expression for Sheet resistance R_s apply this to Transistor channels and calculate CMOS Inverter Resistance.
b) Justify Transmission gate is good for Switch Logic.

5. a) Explain the operation of 4x4 barrel shifter with neat sketch.
b) Briefly explain the various design considerations for the different adder circuits.

6. With the help of schematic explain the principle of operation, salient features, advantages and applications of FPGAs.

7. a) Give flow diagram for design of VLSI circuits.
b) Explain various tools available for verification of CMOS chip design.

8. a) Explain the D-algorithm test method with the help of suitable example and obtain various test vectors.
b) Explain the various faults that occur at the chip level.

CODE No.:10BT61202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

COMPUTER NETWORKS

[Electronics and Communication Engineering, Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

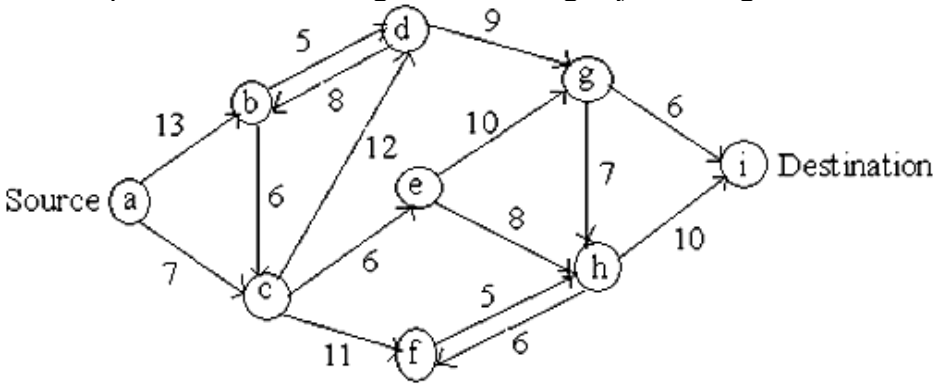
1. What is TCP/IP model? Explain the functions, protocols and services of each layer.
List two ways in which the OSI reference model and the TCP/IP reference model are the same. Now list two ways in which they differ.

2. a) Compare guided and unguided media.
b) Explain the coaxial cable and Twisted pair cables.

3. a) Write the Checksum algorithm.
b) Write the algorithm for Elementary data link protocol under ideal conditions.

4. Explain pure-ALOHA and slotted- ALOHA systems. Give the expression for throughput for each, clearly explaining the various terms.

5. a) What is optimality in forwarding a packet in a network?
b) Find the shortest path for the following network using Dijkstra's algorithm.



6. a) Discuss the advantages and disadvantages of credits versus sliding window protocols.
b) Define Nagle's algorithm.

7. a) What are the different tags of HTML? Explain them briefly.
b) How text documents and image documents are linked using HTML?

8. a) Distinguish between 802.11b and 802.16a.
b) Write in detail, the most commonly used secure e-mail system.

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CODE No.:10BT70101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

REMOTE SENSING AND GIS

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What do you understand by Photogrammetry? What are the procedures of deriving Scale of the photograph?
b) Calculate the height of a lamp post for which parallax is 30mm. Consider flying height 1200m airbase 600m and focal length 0.1524m.

2. a) Discuss the signature curves of water, vegetation and soil.
b) Explain wiskbroom scanner system.

3. a) What is Visual Interpretation Key? Explain various elements of visual interpretation.
b) Describe Structure of a Digital Satellite Image.

4. a) What is GIS? Give detailed notes on the components of GIS.
b) Explain the working principle of GPS.

5. a) Explain the computer file structures to manage GIS data file.
b) Differentiate between map scale, functional scale, graphic scale, verbal scale. Explain UTM.

6. a) Explain the integrated analysis of spatial and attribute data.
b) Write short notes on GIS data input and editing.

7. Discuss the role of remote sensing and GIS in surface water mapping and inventory.

8. Discuss the role of Remote Sensing and GIS in Soil Erosion and Reservoir Sedimentation Studies.

CODE No.:10BT70102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

ENVIRONMENTAL ENGINEERING - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the terms:
i) Sewage ii) Dry weather flow iii) Sullage
b) Bring out a detailed comparison between separate and combined sewerage systems.

2. a) Explain how you arrive at the quantity of wastewater. What are additions and subtractions and how do you account for those?
b) The hydraulic gradient of two points A and B separated by a distance of 3Km in a sewer line is 48 m and 45 m respectively. Assuming the full flow in the section at the rate of 2000 lpm and Hazen William's constant as 120, find the diameter of circular section required. If the above circular section is to be replaced by an equivalent egg-shaped sewer, find the equivalent diameter.

3. a) The following observations were made in laboratory on 2% dilution of waste water sample at 20°C :
D.O of aerated dilution water = 7mg/L
D.O of original sample of waste water = 0.5mg/L
D.O of diluted sample after 5 days of Incubation = 2mg/L
Calculate 5 day BOD of the sample and ultimate first stage BOD.
Assume deoxygenating rate constant as 0.1 at the test temperature.
b) Write short note on:
i) BOD & COD ii) Population equivalent

4. a) Sketch the sequence of units in a wastewater treatment plant and indicate the objectives of each unit in the sequence.
b) Design a PST for a city which is to treat all the wastewater contributed by 600,000 people with a consumption rate of 135 lpcd.

5. a) Determine the size of high rate tricking filter for the following data:
i) Sewage flow : 10 mld
ii) Recirculation ratio : 1.5
iii) BOD of raw sewage : 250 mg/l
iv) BOD removal in primary clarifier : 30%
v) Final effluent BOD desired : 30 mg/l
Assume depth of Trickling filter as 2.0 m
b) Differentiate between oxidation ponds and oxidation ditches.
Explain the working principles of each unit.

6. a) Explain the necessity of tertiary treatment. What are the possible units in this stage?
b) Write a detailed note on removal of phosphorous from wastewater.

7. a) What is oxygen sag curve? State the Streeter and Phelph's formulations to determine the critical DO deficit, its point of occurrence on the downstream direction of the disposal of wastewater into a stream.

b) Design a septic tank for a community with a population of 50 numbers. The sewage flow is 135 liters per person per day. The desludging period is 3 years. Assume the length to width ration of 3.5:1.

8. a) Define solid wastes. Describe the flow of materials and generation of solid wastes in a technological society.

b) What is composting? Discuss any one of the methods of composting practiced in India.

CODE No.:10BT70103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

STEEL STRUCTURES - II

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. A plate girder is composed of the following elements.
Web plate : 900mm depth x 10mm thickness.
Two angles: ISA 200mm x 100mm x 12mm @ 27.2kg/m in each flange.
Two flange plates: 500mm x 16mm in each flange.
The girder is simply supported over an effective span of 16m.
Determine the safe UDL which the girder can carry inclusive of its own weight. Assume that the compressive flange is not restrained against lateral bending, but its ends are restrained against torsion.

2. A welded plate girder is simply supported over an effective span of 16 m. It carries a UDL of 60 kN/m inclusive of its own weight along with two concentrated loads of 400 kN each at 4 m from either end. Design the plate girder excluding the stiffeners.

3. The trusses for a factory building are spaced at 4.0 m and the purlins are spaced at 1.8 m center to center. The pitch of the truss is 1/4 and the span of the truss is 16 m. The vertical load from roof sheets are equal to 200N/m^2, and the wind load on the roof truss is equal to 1.7 kN/m^2.
Design an I section purlin.

4. A tension member carrying a force of 50 kN meets the principle tie of a truss at an angle of 45^o. The force in principal tie is 80 kN. Design the members and also the welded joint.

5. Design a simply supported gantry girder carrying manually operating travelling crane for the following data.

Carne Capacity	200 kN
Self weight of the crane girder excluding trolly	250 kN
Self weight of the trolly	50 kN
Minimum hook approach	1.2 m
Wheel base (distance wheels)	3.5 m
Center to centre distance between gantry rails (span of crane girder)	16 m
Center to centre distance between columns (span of gantry girder)	6.5 m
Diameter of crane wheels	150 mm
Self weight of rails	0.3 kN/m

6. Design the following elements of an elevated square steel tank of size 6.1 m and tank height 3.66 m.
i) Thickness of the pressed steel plates. ii) Stays for the plates. iii) Bottom potion of the tank.

7. Give the stepwise procedure for the design of composite beam with shear connections.

8. A portal frame with both ends hinged consists of left column of 4 m height, right column of 3 m height and beam of 5 m span. Plastic moments of left column and the beam are 2 M_p and that of right column is 1.5 M_p. It is subjected to a horizontal load of $w_u/2$ at beam level and a vertical load of w_u at 3 m from left end of beam. Determine the collapse load and draw plastic BMD.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

TRAFFIC ENGINEERING AND MANAGEMENT

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss about the derived parameters of traffic flow and how they are related to fundamental parameters.
b) Define Peak Hour Factor, its importance and range of values.

2. a) What are the different types of methods used in the analysis and presentation of speed data? Explain.
b) Explain the use of Origin and Destination studies and the methods to conduct the same.

3. a) Define Capacity. What is the importance of capacity in Highway Transportation studies?
b) What are Multi-storey car parks? Mention the design standards.

4. a) The traffic flow at an intersection is as shown below. Assuming start-up lost time is 2 seconds, saturation headway is 2.5 seconds, Compute the cycle length and design a two-phase signal. Show the phasing and timing diagrams with a neat sketch.

From	To	Volume (Vehicles/hr)
N	S	1150
S	N	900
E	W	1300
W	E	1800

b) Explain need for co-ordination of signals and illustrate with a time-space diagram**.**

5. a) What are the major pollutants released into the atmosphere by road traffic? What are their adverse effects?
b) What are the Principles to be followed in the design of intersections?

6. a) Illustrate with neat sketches different types of traffic signs with at least 4 examples for each category.
b) Discuss about the specifications of lane markings required for a two-lane two-way undivided highway.

7. a) What are the major causes of road accidents? Explain.
b) What is meant by Road Safety audit? What are the guidelines for Road safety audit?

8. Write short notes on the following:
i) Peak Hour factor and service volume
ii) Traffic Calming Methods
iii) Tidal Flow Operations as part of TSM

CODE No.:10BT70107

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

DESIGN AND DRAWING OF IRRIGATION STRUCTURES

[Civil Engineering]

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

Answer any ONE question
All questions carry equal marks

1. Design a cross regulator for a canal with the following data

Hydraulic particulars of canal upstream:
Full supply Discharge = $150m^3/s$.
Depth of water = 2.50m
Full supply level = +200.00
Bed level = +197.50
Bed width = 55m

Hydraulic particulars of canal downstream:
Full supply Discharge = $150m^3/s$.
Depth of water = 2.50m
Full supply level = +199.80
Bed level = +197.30
Bed width = 50m

Assume a safe exit gradient of 1/6. Neglect head due to velocity approach. Assume discharge coefficient of 0.58 for freely discharging portion of the weir and 0.80 for submerge portion of the weir. Calculate crest dimension and waterway. Using Khosla's theory, design the impervious floor for regulator. Provide suitable piers and abutments. Draw plan and sectional elevation of the canal cross regulator.

2. Design a Syphon Aqueduct across a stream with the following data.

Hydraulic particulars of the canal:
Full supply discharge = $35m^3/s$
Full supply level = +201.75
Full supply depth = 1.75m
Bed level = +200.00
Side slope = 1.5H:1V
Bed width = 26m
Canal flumed width = 13m

Assume maximum span of canal trough as 6 m and thickness of intermediate walls as 0.4 m and outer walls of 0.5 m thick. Provide 6 m wide inspection road on the extreme left compartment.

Hydraulic particulars of the stream:
Maximum flood discharge = $300m^3/s$
High flood level = +200.50
Bed level = +198.00
Natural ground level at site = +199.00

Assume pier width as 1.50 m and span length should not exceed 10 m. Concrete weight = $24KN/m^3$. Coefficient of friction in the barrel with cement plaster = 0.003; head loss coefficient for square entry = 0.505.

Calculate water way for canal and drainage and head loss in the barrel. Also compute dimension of impervious floor and the junction of canal and drain. Draw plan and sectional elevation of the Syphon Aqueduct.

CODE No.:10BT70111

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

GROUND IMPROVEMENT TECHNIQUES

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the physic-chemical, electrical and hydraulic methods of ground improvement.
b) What is the need and objectives of ground improvement?

2. a) Distinguish between the techniques of vibrofloatation and compaction piles.
b) Describe the deep compaction in granular soil with the factors influencing.

3. a) Explain the electro-osmosis method of densifying cohesive soil.
b) Distinguish between sand drains and stone columns.

4. What are the various types of grout injection methods? Explain any two with the aid of illustrative sketches. Also discuss the suitability of the methods with reference to soils/rocks.

5. a) Explain the ground anchors technique.
b) Differentiate between rock bolting and soil nailing.

6. a) What are the design checks adopted for a reinforced earth structure?
b) Identify two practical applications where gesynthetic is used as reinforcement.

7. a) Briefly describe any two foundation techniques used in expansive soils.
b) Which ground improvement technique do you use, if the expansive soil is extending upto 20 m from ground level and the foundations are to be laid at 3 m from the ground level? Explain why.

8. a) Write any two tests for the identification of expansive soils.
b) Write any two foundation practices in expansive soils.

CODE No.:10BT70201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

SWITCHGEAR AND PROTECTION

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain, what is the difference between symmetrical components of positive, negative and zero phase sequence.
b) A 3Φ star connected alternator is rated 30MVA, 13.8 KV and has the reactance values $X_1 = 0.25$pu, $X_2 = 0.35$pu and $X_0 = 0.10$ pu. The neutral of the alternator is solidly grounded. Determine the alternator line currents when a double line-to-ground fault occurs on its terminals. Assume that the alternator is unloaded and is operating at rated voltage when the fault occurs.

2. A circuit breaker is rated as 2500A, 1500 MVA, 33KV, 3 sec, 3 - phase oil circuit breaker. Determine the rated symmetrical breaking current, rated making current, short time rating and rated service voltage.

3. a) How does a distance relay derive its name from its function? Draw a neat sketch of a time distance relay and explain its working.
b) The current rating of an over current relay is 5A, PSM=2, TSM=0.3, C.T ratio=400/5, fault current = 4000A. Determine the operating time of the relay.
At TSM=1, Operating time at various PSM are:

PSM	2	4	5	8	10	20
Operating time in sec	10	5	4	3	2.8	2.4

4. a) Classify the various types of over current relays and give their applications along with approximate characteristics.
b) Show mathematically, how the distance relays should be connected so that they provide equally sensitive protection against three-phase and phase -to-phase faults. Also show the diagram of connections.

5. a) Explain a scheme of protection for failure of alternator excitation.
b) Discuss the percentage differential protection scheme of a transformer.

6. a) Give various schemes of protection for feeders.
b) Explain bus-bar protection need special attention. Why?

7. a) Explain, with the help of circuit and phasor diagram the function of Peterson coil in a three phase system.
b) A 50 Hz transmission line has a capacitance of 0.2 μF per phase. Determine the inductance of Peterson coil to neutralize the effect of capacitance of
i) complete length of line ii) 85% of length of line iii) 45% of the length of the line.

8. Write short notes on the following:
i) Switching surges. ii) Lighting arresters. iii) Rod-gap arrester. iv) Surge absorbers.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

POWER SYSTEM OPERATION AND CONTROL

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain input output characteristics, incremental fuel characteristics of thermal power plant.
b) A power system with two generating units supplying a total load of 110 MW. The incremental fuel cost characteristics of two units are

$$IC_1 = 15+0.08P_{G1} \quad \& \quad IC_2 = 13+0.1P_{G2}.$$

Determine the saving in fuel cost in Rs/hr due to economic scheduling as compared to equal distribution of the same load between the two units. Neglect the losses.

2. a) Discuss and define the loss formula coefficients.
b) Discuss the objective of economic scheduling when losses considered.

3. Derive expression for optimal short term scheduling of hydro thermal power plant.

4. a) Derive the transfer function of an excited system and represent in a block diagram.
b) Explain the state space model of a synchronous machine.

5. Develop the model of single control area and obtain its block diagram representation. Explain the salient features under static and dynamic conditions.

6. a) Explain tie line bias control for multi area power system.
b) Two power stations A & B each have regulation (R) of 0.1 p u (on respective capacity bases) and stiffness K of 1.0 p. u. The capacity of system A is 1500 MW and of B is 1000 MW. The two systems are interconnected through a tie line and are initially at 60 Hz. If there is 100 MW load change in system A, calculate the change in the steady-state values of frequency and power transfer P_{12} without the participation of governor control.

7. a) Write short notes on compensated and uncompensated transmission lines.
b) Write about the shunt and series compensation of transmission systems.

8. Write a short note on following:
i) Load frequency control.
ii) Voltage control.
iii) Control area.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May – 2016

POWER SYSTEM ANALYSIS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. What are the advantages of Z-Bus building algorithm? Explain what are primitive network, primitive admittance matrix and primitive impedance matrix by giving an example.

2. Derive the equations for finding the elements of the bus Impedance matrix
i) When the added element is a Branch ii) When the added element is a Link.

3. a) Classify the buses in a power system load flow analysis.
b) Write iterative algorithm to find the load flow solution using Gauss-Seidel method, when both PQ and PV busses are present.

4. a) What is the importance to study the short circuit analysis? Discuss the possible causes of short circuits in the power system.
b) A 30 kW, three phase, Y connected load is fed by a 110 kVA transformer with voltage rating 11kV/415 V through a feeder. The length of the feeder is 0.7 km and the impedance of feeder is (0.1 + j2.5) Ω/km. If the load power factor is 0.85, calculate p.u. impedance of the feeder and load.

5. a) A two-pole 50 Hz, 11 KV turbo alternator has a rating of 100 MW, power factor 0.85 lagging. The rotor has a moment of inertia of a 10,000 Kgm^2. Calculate H and M.
b) Explain why transient stability limit is lower than steady state stability limit.

6. a) What is the operator 'a'? Show that:
i) $a^3 = 1$ ii) $1+a+a^2 = 0$ iii) $a - a^2 = j\sqrt{3}$
b) Discuss the symmetrical components method to analyze an unbalanced 3-phase system.

7. Explain about the methods to improve Steady State stability.

8. a) Explain the concept of "Equal area criterion". Explain the equal area criterion for the case of "sudden change in the mechanical input" for a single machine connected to infinite bus bar system.
b) Explain the procedure of obtaining the solution of Swing equation by point-by-point method.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

FLEXIBLE AC TRANSMISSION

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain, power flow in parallel paths with a neat sketch.
b) What factors limits the loading capability?

2. a) Compare voltage source converters with current source converters.
b) Write the advantages of FACTS Technology.

3. Draw and explain the 24-pulse voltage source converter operation.

4. What are the objectives of shunt compensation? Explain about midpoint voltage regulation and improvement of transient stability with shunt compensation.

5. a) Explain the following:
i) Midpoint voltage regulation for a line segmentation.
ii) Power oscillation damping.
b) Explain briefly the variable impendence type static **VAR** generators.

6. a) Explain about SVC and STATCOM with reference to Flexible AC Transmission System.
b) Explain the regulation and slow transfer function of SVC.

7. What is the basic concept of series compensation? With the help of power angle curve, explain how transient stability is improved with the help of series controllers.

8. Write short notes on:
i) Improvement of system stability limit using TCSC.
ii) Enhancement of system damping using TCSC.

CODE No.:10BT70303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

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 = -150 MPa, E = 200 GPa and ν = 0.3. Determine the value of strains ε_x, ε_y, and ε_z.

2. An uniform cross-section bar subjected to loading condition as shown in Fig.1 is fixed at one end and the free end is at a distance of 2.0 mm from the support P=500 kN. Determine:

i) The displacement at the nodal points.
ii) The stresses in elements.
iii) The reactions at supports

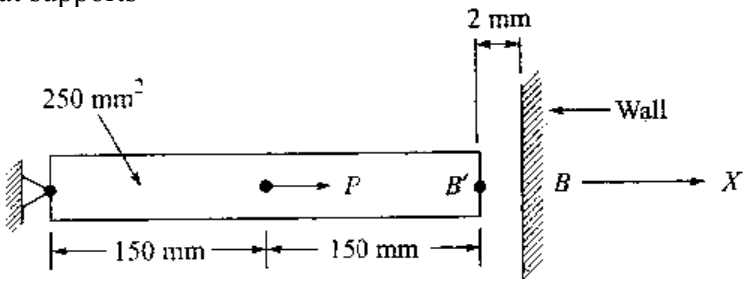

Fig.1

3. Analyze the beam shown in Fig.2 by finite element method and determine the end reactions. Also determine the deflections at mid spans given E = 2 x 10^5 N/mm^2 and I = 5 x 10^6 mm^4.

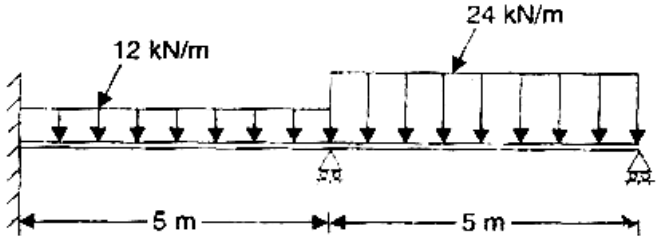

Fig.2

4. For the configuration shown in Fig.3, determine the deflection at the point of load application using a one-element model. Also determine the stress in the element.

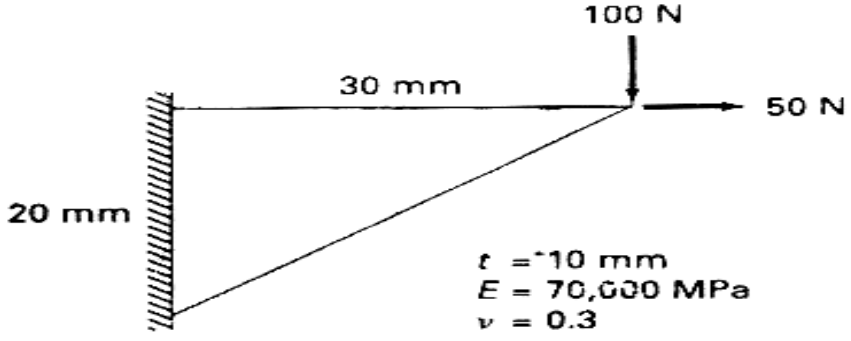

Fig.3

5. Derive the stiffness matrix and body force matrix of an axi-symmetric element.

6. Determine the temperature distribution in the circular fin shown in Fig.4. Exclude the convection Heat loss from the end of the fin. Take h = 0.2 W/cm^2 ^{o}c and T_∞ = 100 ^{o}c and k = 2 w/cm ^{o}c.

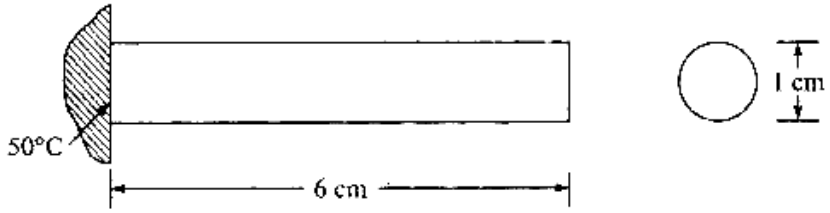

Fig.4

7. Consider the uniform ideal flow as shown in Fig.5. Use the four triangular elements shown to compute the stream function and derive the velocity component. Note that in this case, if you do not as fixed surfaces. The coordinates obtain a uniform floe field; you have made error in either your formulation or your calculation. The horizontal boundaries are taken of node 3 are (1.5, 1).

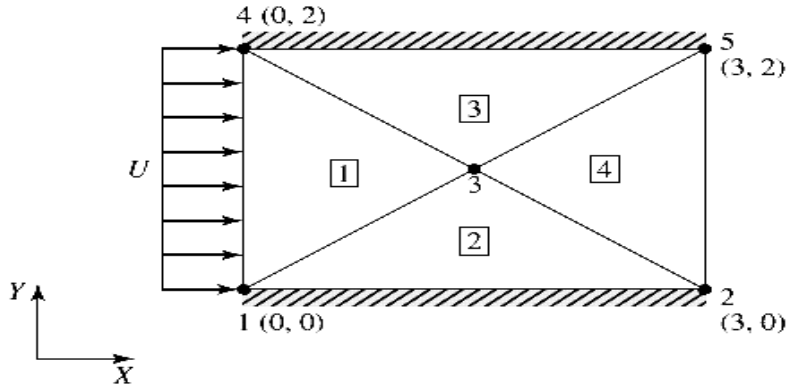

Fig.5

8. Derive the consistent mass matrix for the beam element and CST element.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May – 2016

PRODUCTION AND OPERATIONS MANAGEMENT

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain the historical development of Production and Operations management (POM).

2. a) What are the applications of forecasts?
b) A food processing company uses a moving average to forecast next month's demand. Past actual demand (in units) is as shown in Table 1.

Table 1

Month	Actual Demand
16	100
17	105
18	106
19	110
20	110
21	114
22	121
23	130
24	128
25	

i) Compute a simple 5-month moving average to forecast demand for month 25.
ii) Compute a weighted 3-month moving average, where the weights are highest for the latest months and descend in order of 3, 2, 1.

3. a) What do you mean by MPS?
b) A manufacturer has the following information on its major products:

Regular time production cost = Rs. 8 per unit
Regular time production capacity = 2600 units per period
Overtime production cost = Rs. 12 per unit
Overtime production capacity = unlimited
Inventory holding cost = Rs. 2/unit/period
Shortage costs = Rs. 5/unit/period
Beginning Inventory = 400 units;

Arrive at the optimal production plan if the demand for the periods 1, 2, 3 and 4 are 4000, 3000, 2000 and 2800 units respectively.

4. a) Data integrity is a major issue for many organisations while using an MRP system. Comment on this statement.
b) Explain Enterprise Resource Planning.

5. A job shop has five machines for processing; there are six jobs to be processed. However, current capacity constraints indicate that only five jobs can be processed out of the six. The planner needs to know which jobs to assign to the machines. Identify an optimal loading of the shop on the basis of Table 2, which contains data on the processing time of each job against each machine.

Table 2: Processing time of jobs

Jobs	Machines				
	A	B	C	D	E
1	11	14	17	10	12
2	12	14	16	13	10
3	17	12	11	15	12
4	16	16	12	12	14
5	14	16	10	11	12
6	15	14	13	16	19

6. a) Explain the procedure involved in carrying ABC analysis.
b) What are short comings of ABC classification?

7. a) What do you mean by supply chain structure? What is the relationship between the supply chain structure and supply chain performance?
b) What are the supply chain components?

8. a) Why does JIT manufacturing require changes in manufacturing architecture? What are the key changes made to a manufacturing system for JIT manufacturing?
b) What is the relationship between lean management and JIT manufacturing?

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May – 2016

REFRIGIRATION AND AIR CONDITIONING

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Draw the various events in a Carnot cycle.
b) A reserved Carnot cycle is used to deliver 24,000 kcal/min to heat the conditioned space. The heat is taken from atmosphere at 10°C and supplied to the conditioned space at 25° C. Find the following:
i) H.P. required for running the system.
ii) If the quantity of heat is supplied by electric heaters, find the consumption of electric energy in KW and HP.

2. a) Explain the effects of suction and delivery pressures on the performance of VCRS.
b) Compare VCRS cycle without and with sub cooling on :
i) P-h diagram and ii) T-s diagram. And also explain the variation of COP.

3. a) Draw the line diagram and explain the working of Thermostatic expansion valve and its limitations.
b) Compare and contrast the working details of hermetically sealed and screw compressors.

4. a) With a neat diagram, explain the working of electro-lux refrigerator and how it is different from NH_3-H_2O system.
b) Derive an expression for maximum COP of Vapour Absorption Refrigeration System.

5. a) Explain with the principles and line diagram, the working details of vortex tube.
b) What is the basic principle of steam jet refrigeration? Explain its working along with its limitations.

6. a) Explain various psychrometric processes.
b) Moist air at 1 atm. pressure has a dry bulb temperature of 32°C and a wet bulb temperature of 26°C. Calculate i) the partial pressure of water vapour, ii) humidity ratio, iii) relative humidity, iv) dew point temperature, v) density of dry air in the mixture, vi) density of water vapour in the mixture and vii) enthalpy of moist air using perfect gas law model and psychrometric equations.

7. What is the difference between a fan and a blower? Explain various types of fans.

8. Design of Air-conditioning System. The following data were collected to design an air conditioning system for restaurant in Mumbai.

Outside conditions ….. 34°C DBT & 28°C WBT.
Inside design conditions …… 24°C DBT & 50%RH.
Solar heat gain through walls, roof and floor 16160 kj/hr.
Solar heat gain through glass .. 15200kj/hr.
Occupants .. 13 smoking and 12 non-smoking.
Latent heat gain per person … 360kj/hr.
Sensible heat gain per person … 300kj/hr.
Internal lighting load … 15 lamps of 100 watts capacity each and 10 fluorescent tubes of 80 watts each,
Sensible heat gain from other sources … 40,000kj/hr.
Infiltrated air … 14 m^3/min

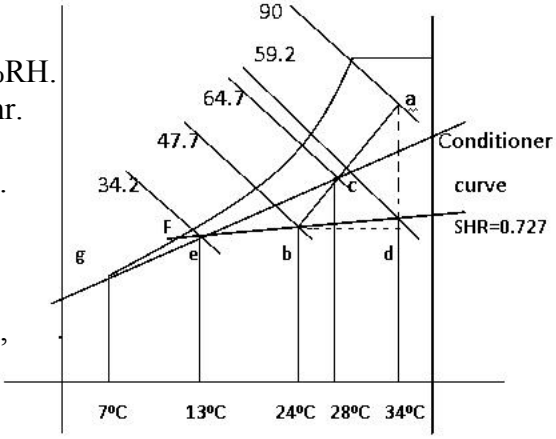

Fig.Prob.Representation of psychrimetric chart.

If 40% fresh air and 60% recirculated air are mixed and passed through the conditioner coil then find the followings:

i) Amount of total air in m^3/hr.
ii) Dew-point temperature of the coil.
iii) The condition of supply air to the room.
iv) The capacity of the conditioner in tons of refrigeration.
Assume bypass factor of the coil 0.35.

CODE No.:10BT70309

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

POWER PLANT ENGINEERING

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Give the layout of a modern steam power plant and explain it briefly.

2. a) What factors are considered in evaluating the performance of electrostatic precipitator?
b) Explain about the Travelling grate stockers with the neat sketch.

3. Give the layout of diesel engine power plant. What are the advantages and disadvantages of diesel power plants?

4. a) Draw a neat sketch of a combustion chamber used in modern open-cycle gas turbine power plant. Explain its working. What are the desirable requirements from the combustion system?
b) Explain the intercooling method used to improve the thermal efficiency of a simple pen cycle constant pressure gas turbine power plant.

5. a) Describe different types of surge tanks. How will you differentiate differential type with that of simple or restricted orifice type?
b) What do you understand by "pump storage plant"? What are the advantages and limitations of this power plant? Where can such schemes be best applied?

6. a) What are the methods are used to overcome the fluctuating power generation of a wind mill? Discuss their merits and demerits.
b) Draw a neat diagram of a power generating system illustrating the use of flat plate collector as a source of energy.

7. a) Explain the working of a typical fast breeder nuclear reactor power plant with the help of a neat diagram.
b) List down the nuclear waste disposal method.

8. a) Define the plant "Use factor" and plant "Capacity factor" and state their uses in the design and operation of the power plant.
b) The load on a power plant with respect to time for 24 hours are listed below.

Time(hours)	0-6	6-8	8-12	12-14	14-18	18-22	22-24
Load (MW)	40	50	60	50	70	80	40

Draw the load curve and find the load factor of the power station. If the loads above 60 MW are taken by a stand-by unit of 20 MW capacity, find the load factor of the stand-by unit.

CODE No.:10BT70402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

DIGITAL IMAGE PROCESSING

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe an image model with a neat sketch. Explain how digital images are represented.
b) What is meant by Adjacency, Connectivity, Regions and Boundaries?

2. Write short notes on:
i) Discrete Cosine Transform
ii) Walsh Transform

3. Write short notes on:
i) High-boost filtering
ii) Unsharp Masking
iii) Median Filter

4. a) Explain about smoothing and sharpening methods in frequency domain.
b) Discuss about Homohorphic filtering.

5. a) Write notes on various source models with respect to Image restoration.
b) What is inverse filtering?

6. a) Write short notes on the performance of edge detection operators.
b) Write notes on Point operations.

7. a) Construct a Huff-man coding for the following data with corresponding probabilities

a	b	c	d	e	f
0.1	0.1	0.2	0.2	0.05	0.05

Prove that this huff-man code gives error free compression
b) Write short notes on:
i) Inter pixel redundancy
ii) Psychovisual Redundancy

8. Write short notes on
i) Color Models
ii) Color Image Segmentation.

CODE No.:10BT70405

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

EMBEDDED AND REALTIME SYSTEMS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is an embedded system? Discuss main characteristics of embedded system.
b) List and define the main design technologies. How these design technologies helpful to designers?

2. Explain the processors in an embedded system.

3. a) Short notes on concurrent process model.
b) What are the requirements of Real time systems and describe each? Give examples of real time system to support your arguments.

4. a) Explain the need for communication interfaces used in embedded systems. Consider UART as an example.
b) Illustrate IEEE 1394 Firewire protocol with suitable example.

5. Design a table to clearly distinguish the cases when there is concurrent Processing of processes, with task, threads by using scheduler.

6. a) What is meant by priority Inversion problem? Explain it with an example.
b) What is meant by pipe? How does a pipe differ from a queue? Explain with an example.

7. a) Enumerate the evolution of various pipelining structures in ARM.
b) Explain Data Transfer Instructions of ARM in detail with examples.

8. Explain the following related to embedded system design technology.
i) RT Synthesis.
ii) Reuse of intellectual property codes.

CODE No.:10BT70407

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

OPTICAL COMMUNICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the advantages of Optical Fiber Communication?
b) What is meant by a graded index optical fiber? Explain it by giving an expression for the possible refractive index profile.

2. a) A step-index multimode fiber with a numerical aperture of 0.20 supports approximately 1000 modes at an 850 nm wavelength.
i) What is the diameter of its core?
ii) How many modes does the fiber support at 1320 nm?
iii) How many modes does the fiber support at 1550 nm?
b) Explain the mechanical properties of fibers.

3. a) With suitable diagrams, explain the outside vapour-phase oxidation process for the preparation of low loss optical fibers.
b) Explain the optical fiber cable design with regard to fiber buffering.

4. a) Explain the quantum efficiency and LED power.
b) Describe the LASER diode modes and Threshold conditions.

5. a) Derive the Power coupling calculations to provide perfect coupling between the source and the fiber.
b) What is the power coupled into a step-index fiber, whose n_1=1.48, n_2=1.46 if surface e-emitting LED radiates 150μW of power.

6. a) Explain the Photo detector noise and discuss the noise sources, Signal-to-noise ratio.
b) Discuss the Temperature effect on Avalanche Gain.

7. a) Explain the Link Power budget with an Optical power loss model for a point-to-point link.
b) Explain the carrier-to-noise ratio for analog links and discuss all the parameters.

8. Write short notes on the following:
i) Phased Array based Devices
ii) Fiber Grating Filters

CODE No.:10BT70501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

PRINCIPLES OF COMPILER DESIGN

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is a regular expression? How is it used in lexical specification?
b) Discuss the role of various phases of a compiler in translation of source program to object program and illustrate with an example.

2. a) Write an algorithm for the elimination of left recursion.
b) Construct the predictive parsing table for the following grammar.
S →A
A →aB/Ad
B →bBC/f
C →g

3. a) What are Handles? What do you mean by Handle pruning? Explain.
b) Differentiate between CLR and LALR parsing table with an example.

4. a) What are the differences between synthesized and inherited attributes?
b) Write Quadruples, triples and indirect triples for the following expression
-(a+b)*(c+d)-(a+b+c)

5. a) Differentiate between name equivalence and structure equivalence? Explain with an example.
b) Explain the specification of a simple type checker.

6. a) Define annotating parse tree. Give the annotated parse tree for **3 * 5 + 4 n.**
b) Explain in detail about the syntax-directed translation of case statements.

7. a) Explain the procedure for the construction of DAG from a given basic block and give the advantages of DAG representation.
b) What is a basic block? Write an algorithm for partitioning the three address statements into basic blocks.

8. What is global register allocation? Explain the concept of usage count in allocating registers and illustrate with an example.

CODE No.:10BT70502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

SOFTWARE TESTING TECHNIQUES

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. What is meant by a software bug? Discuss in detail the consequence of bugs.

2. a) What is Path Testing? How to measure the Effectiveness of path testing?
b) State and explain Compound Predicates with suitable examples.

3. What is Transaction-Flow testing? Explain Transaction-Flow testing strategies.

4. a) What are domain bugs? Discuss how to test them.
b) State and explain with suitable examples various two dimensional domain bugs.

5. a) Explain about mean processing time of a routine with an example.
b) Explain about the limitations and solutions of applications.

6. a) Explain KV chart for double variable.
b) What is decision table and how is a decision table useful in testing?

7. What are the Test Design Strategies for State Graph based Testing? Explain.

8. Explain about synchronization of test cases.

CODE No.:10BT71001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

ANALYTICAL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Sketch the pH meter and explain its principle and working. What are the applications of a pH meter?
b) Compare Sodium, Silica and Hydrogen analyzers in all respects.

2. a) Explain the working of carbon monoxide monitor.
b) Discuss briefly different instrumental techniques of sulphur dioxide.

3. a) Explain the basic parts of a gas chromatograph with the help of a neat sketch.
b) Explain the fluorescence detection system in liquid chromatography.

4. a) With neat diagram, explain the Beckman Paramagnetic Oxygen analyzer.
b) With a neat characteristic curve, explain Polar graphic Cell.

5. a) Discuss different sources of error in spectrophotometric measurements.
b) Explain the working of IR spectrophotometer.

6. a) Explain the working of atomic absorption spectrophotometer.
b) What are the interferences associated with flame photometry?

7. Write short notes on:
a) Resonance conditions in NMR and NMR absorption spectra.
b) Radio frequency transmitter and Receiver.

8. a) Draw the schematic of GM counter and explain the principle of operation.
b) Explain the constructional details and principle of operation of a surface barrier detector.

CODE No.:10BT71002

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

AUTOMATION OF INDUSTRIAL PROCESSES

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Distinguish Direct Digital Control from Distributed Control with necessary diagram.

2. Explain the different network topologies in detail.

3. Describe Ziegler–Nichols open-loop method of tuning P, PI, PID controllers.

4. Design a deadbeat controller for the process. $G(s) = \frac{e^{-1.46s}}{3.33s + 1}$ with sampling time(T) = 1.

5. What are the advantages and disadvantages of feed forward controller over feedback controller? Draw the block diagram of feed forward and feedback controller.

6. Explain how the relative gain array is calculated for the 2**x**2 multivariable systems.

7. Develop Ladder logic diagram for
i) AND ii) OR iii) NAND iv) NOR v) X-OR Gates

8. Explain the step by step procedure for integration of DCS with PLC and computer.

CODE No.:10BT71005

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

MEMS AND MICROSYSTEMS

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Give an account of evolution of micro fabrication.
b) Compare microelectronics and microsystems.

2. a) Why are electrostatic forces used to run micro motors rather than conventional electromagnetic forces? Explain why this actuation technique is not used in macro devices and machines.
b) What are the advantages and disadvantages of piezoresistors and capacitors as signal transducer?

3. Considering the case of damping and resonant vibrations, formulate the necessary theory that forms the basis of micro accelerometer.

4. a) What is importance of SCALING in MEMS? What are the two types of SCALING LAWS applicable in the design of Microsystems?
b) What is Paschen Effect? Explain about the scaling in electrostatic and electromagnetic forces.

5. Explain the method of preparation of single crystal Silicon ingots, on what factors the choice of wafer depends?

6. a) Explain various diffusion techniques used in MEMS industry.
b) Compare between the following processes
i) CVD. ii) PVD. iii) Epitaxy.

7. a) Write a note on various etch stop mechanisms used in bulk micro machining.
b) What are various design considerations that are involved in using the following materials?
i) silicon ii) GaAs iii) quartz and iv) polymer as substrate materials

8. What are the interface problems that are associated with micro system packaging of
i) Biomedical sensors.
ii) Optical sensors.
iii) Mechanical sensors.

CODE No.:10BT71201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

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 the HTML document head in detail with the help of example.
b) Explain the different ways of formatting blocks of information.

2. a) Write a JavaScript to generate and display random numbers.
b) Explain about Arrays and write a JavaScript to sort list of strings.

3. a) Give the syntax of an XML document and explain how a basic XML document is created with an example.
b) Explain the following terms related to document type definition:
i) Elements ii) Attributes & entities iii) Internal & external entities

4. a) Explain the lifecycle methods of a servlet.
b) Explain session creation and tracking using **http** session interface.

5. Write a Program to establish a simple database connection and retrieve data.

6. Write a JSP program to store student details into database using JDBC. Create a JSP page to read details like roll no., name, gender, class, address, phone, etc.

7. a) Discuss about javax.servlet.jsp.tagext package.
b) Develop a JSP with a Bean in the application scope.

8. What is Custom Tag library and how is it defined? Give an example.

CODE No.:10BT71202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

MOBILE COMPUTING

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Give the diagram of Three-Tier architecture for Mobile Computing applications and explain.
b) State the applications and limitations of Mobile Computing paradigm.

2. a) Distinguish between Near and Far terminals.
b) Explain about TDMA in detail.

3. a) Briefly describe about physical layer of Bluetooth.
b) Explain about IEEE 802.11.

4. Explain the following with suitable diagrams.
i) DHCP ii) DSR iii) AODV

5. a) Discuss the improvement of various factors by cache in detail.
b) Discuss about query processing.

6. Explain push-based mechanisms.

7. a) What is MANET? How it is different from cellular system?
b) Compare the algorithms - AODV and DSDV.

8. Explain about the architecture of WAP gateway.

CODE No.:10BT71203

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May – 2016

MULTIMEDIA AND APPLICATIONS DEVELOPMENT

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Differentiate multimedia and hypermedia.
b) Discuss the various colour models.

2. Explain the process of analog to digital conversion and illustrate the problems encountered with respect to quality of data retrieval.

3. Explain various compatible types and casting of Action Script.

4. a) What is a package? Write an Action Script program for creating a package.
b) Explain Exception handling cycle.

5. Explain the use of MovieClip Sub class.

6. Suggest a compression technique for storage of medical documents and justify it.

7. Discuss LPC (Linear Predictive Coding) vocoders.

8. What are the various factors on which QoS for multimedia data transmission depends? Explain.

CODE No.:10BT71204

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

CRYPTOGRAPHY AND NETWORK SECURITY

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is a security attack? Explain the classification of these attacks.
b) Construct cipher text for the plain text "PAY MORE MONEY" and the keyword MONARCHY" using play fair technique.

2. a) Show that Fiestel Decryption is the inverse of Fiestel Encryption.
b) "To achieve greater security, both link and end-to-end encryption is needed." Justify?

3. a) Illustrate Diffie-Hellman key exchange algorithm with an example.
b) Explain the following:
i) Key and Policy information.
ii) Certificate subject and Issues attributes.

4. a) Explain the importance of MIME and S/MIME.
b) Explain general format of PGP message.

5. a) Explain, how authentication and data integrity is provided in IPSec using Authentication Header.
b) What are ISAKMP exchange types?

6. a) Explain different Alert codes defined in SSLV3.
b) What are the roles of different participants in SET system?

7. a) Explain about Malicious software and counter measures.
b) Explain about SNMPV3 protocol with a diagram.

8. a) Explain the characteristics of a good firewall implementation.
b) What is a Trojan horse defense?

CODE No.:10BT71208

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

SOFTWARE PROJECT MANAGEMENT

[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) What constitutes a good software cost estimate?
b) How do the tools have influence on pragmatic software cost estimation?

2. How to improve team effectiveness?

3. Describe the states that evolve through a project environment artifact.

4. a) Describe software architecture from technical perspective.
b) Explain workflow of an iteration.

5. a) Differentiate between major and minor milestones.
b) With the help of a table, explain allocation of effort and schedule across the life cycle phases.

6. Discuss about project organizations and responsibilities.

7. a) Why Change Management is critical to iterative processes? Explain.
b) What are the basic characteristics of a good metric? Explain.

8. a) Which are the sources of architectural risks? Summarize the key differences in the process primitives for varying level of architectural risk.
b) What are the differences in workflow priorities between small and large projects? Explain.

CODE No.:10BT71222

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

SOFTWARE ARCHITECTURE

[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 Architecture Business Cycle.
b) Discuss software architecture.

2. a) Write notes on event based invocation.
b) Explain about object oriented organization.

3. a) What are the most common and useful software architecture structures? How do they differ?
b) Explain Evolution of Shared Information Systems in Software Development Environments.

4. Explain the architectural features of World Wide Web.

5. Explain Patterns for Interactive System.

6. Write briefly about Architectural Design Space.

7. Explain, how architectural information is captured from an ADL.

8. a) Explain about Creating Products and Evaluating a Product Line.
b) Write short note on Component Based Systems.

CODE No.:10BT71301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May - 2016

NEURAL NETWORKS AND FUZZY SYSTEMS

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the following:
i) Different types of Neuron Activation function.
ii) Artificial Neuron models.
b) Explain the characteristics of Artificial Neural Network.

2. a) What is a Perceptron model? What are the limitations of Perceptron model?
b) State and explain Hebbian Learning Rule.

3. a) Explain the Hopfield network algorithm.
b) Explain about full CPNN.

4. a) Explain, how Hopfield network can act as auto associative memory.
b) Can Hopfield network act as hetero associative memory? Discuss in detail.

5. a) Define classical set.
b) Differentiate fuzzy set from classical set and name the properties of classical (crisp) sets.

6. a) Explain the three types of defuzzification methods with its formulae.
b) Let $\widetilde{A}_1, \widetilde{A}_2$ are two fuzzy sets as shown in Fig 1 and Fig 2.

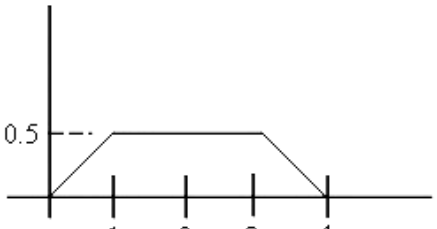

Fig 1 $\widetilde{A}_1$

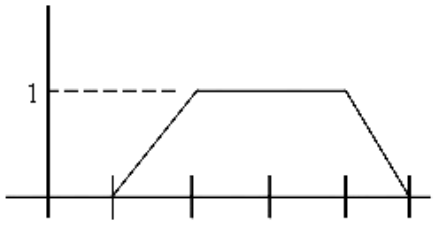

Fig 2 $\widetilde{A}_2$

Find the defuzzified value using centroid method.

7. Develop the rule base considering three membership functions for controlling a second order system with step input using fuzzy logic controller.

8. a) Explain, how ANN is used for process control.
b) Explain, application of temperature control using Fuzzy logic.

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CODE No.:10BT71501

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC10) Supplementary Examinations May – 2016

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 the three states of TCP connection establishment in detail.
b) Briefly explain protocol usage by common internet applications.

2. Explain various elementary TCP socket functions.

3. Discuss 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) Write about poll function.
b) Explain in detail about the various I/O models in Unix operating system.

5. a) Explain UDP echo server functions.
b) What is meant by lost datagram?

6. a) Discuss IPv6 support in DNS.
b) What is the need of converting host names into IP address format and explain `gethostbyname` function.

7. a) Briefly discuss about the System V IPC mechanisms.
b) Give an example application where FIFO can be used.

8. a) What is pseudo-terminal?
b) Explain RPC.

CODE No.:10BT6HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2016

MANAGEMENT SCIENCE

[Civil Engineering, 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. Discuss F.W.Taylor's Management philosophy and clearly explain its merits and demerits in comparison with Henry Fayol's contributions.

2. a) Explain the strengths and weaknesses of departmentation by function.
b) Distinguish between the features of functional organization and line and staff organization.

3. Resistors for electronic circuits are manufactured on a high-speed automated machine. The machine is setup to produce a large run of resistors of 1000 ohms each. To set up the machine and to create a control chart to be used throughout the run, 10 samples were taken with four resistors in each sample. The complete list of samples and their measured values are as follows:

Sample Number	Readings (in ohms)			
1	1010	991	985	986
2	995	996	1009	994
3	990	1003	1015	1008
4	1015	1020	1009	998
5	1013	1019	1005	993
6	994	1001	994	1005
7	989	992	982	1020
8	1001	986	996	996
9	1006	989	1005	1007
10	992	1007	1006	979

Develop $\overline{X}$ and R-charts and plot the values. Using these charts, comment about the process.

4. a) Define marketing and explain its functions.
b) Derive the expression for EOQ. Clearly state all the assumptions made in the derivation.

5. a) What is motivation? Explain the importance of motivation in an organization.
b) Differentiate between job evaluation and merit rating. Explain any two methods of job evaluation.

6. a) What is Float? State the different types of floats.
b) The time and cost estimates of a project and their precedence relationship are given below:

Activity	Preceding 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	1,000	6,000
E	B	14	6	9,000	13,000
F	C, D	8	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.

7. a) Define Entrepreneurship and briefly explain characteristics of it.
b) Write short notes on “social responsibilities” of an entrepreneur.

8. a) What is meant by BPO? Explain with examples related to manufacturing organizations.
b) Briefly discuss the different strategies of supply chain management.

CODE No.:10BT60405

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2016

VLSI DESIGN

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) With neat sketches, explain drain characteristics of an n-channel enhancement MOSFET.
b) With neat sketches, explain how CMOS fabricated in n-well process.

2. a) Determine the pull up to pull down ratio of an nMOS inverter driven by another nMOS transistor.
b) Draw the circuit for nMOS inverter and explain its operation.

3. a) What is stick diagram? Draw the stick diagram for 3-input NOR gate in nMOS logic.
b) Briefly explain the **λ**-based design rules for wires, contacts and transistors.

4. a) Design a Pseudo-nMOS logic that implement the function F' = (AB+C (D+E) +F).
b) Explain the Rise Time delay and Fall Time delay of CMOS inverter.

5. a) Draw and explain the structure of transmission gate adder.
b) Give carry select adder structure and discuss its operations.

6. a) Draw and explain the FPGA chip architecture.
b) Discuss FPGA routing techniques.

7. a) What do you mean by synthesis? Explain the process of constructing a gate level net list from a model of a circuit described in VHDL.
b) With a neat sketch, explain about top-down design methodologies.

8. Write short notes on:
a) Need for testing
b) Chip level test techniques
c) D-Algorithm.

CODE No.:10BT61302

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2016

ROBOTICS AND AUTOMATION

[Electronics and Instrumentation Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the various types of automation in which situation each type is recommended?
b) Write a short note on elements of a CAD/CAM system and reasons for its implementation in production system.

2. A large Cartesian coordinate robot has one orthogonal slide with a total range of 30 in. One of the specifications on the robot is that it have a maximum control resolution of 0.010 in. On this particular axis determine the number of bits of storage capacity the robot's control memory must possess to provide this level of precision.

3. Explain the various drive systems used with an industrial robot and compare their features, merits and demerits.

4. a) A vacuum gripper is to be designed to handle flat plate glass in an automobile windshield plant. Each plate weighs 14kg. A single suction cup will be used and the diameter of the suction cup is 20cm. Determine the negative pressure required to lift each plate. Use a safety factor of 2 in your calculation.
b) Why is a storage tank necessary in pneumatic actuators?

5. Derive equations to calculate the velocity of a tip of the two-link planar, RR- manipulator arm.

6. What is spot welding? Describe briefly the operations involved in robotic spot welding. What are the advantages of robotic welding over manual welding?

7. a) Enumerate the importance of materials handling system in FMS.
b) Describe the types of materials handling devices used in a FMS.

8. Discuss about differences between the proximity and range sensors with their applications in robots.

CODE No.:10BT70402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2016

DIGITAL IMAGE PROCESSING

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the basic relationships between the pixels.
b) Write the different Arithmetic and Logical operations that can be applied to images.

2. With mathematical expressions, discuss Hotelling transform and explain how it is useful in Image Processing. How it is different from other transforms.

3. What is histogram equalisation? For a gray square image of 3 bit gray level, the gray levels and the number of times the gray level appears (n_i) is given below:

Gray level	0	1	2	3	4	5	6	7
n_i	10	0	0	0	5	10	0	0

Find size of the image and histogram equalized image.

4. a) Explain the method of image smoothing in frequency domain.
b) With neat block diagram, explain the homomorphic filtering.

5. a) Write notes on estimating the degradation function with respect to Image restoration.
b) Explain inverse filtering.

6. a) Explain the region based segmentation.
b) Describe point, line and edge detection techniques.

7. a) Discuss different types of image redundancies.
b) Explain the need for channel encoder and decoder.

8. a) Describe the colour image segmentation in detail.
b) Explain various colour models used in the digital representation of a color image.

CODE No.:10BT70405

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2016

EMBEDDED AND REALTIME SYSTEMS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Describe the design challenges in an embedded system design.
b) Write notes on RT-level sequential logic of single purpose processors used in embedded system design.

2. a) Give the description of datapath and memory units of general purpose processor.
b) List some of the instructions with examples for a general purpose processor.

3. a) Describe in detail about various models and languages.
b) Briefly describe data flow model with neat sketch.

4. a) Explain the need for communication interfaces used in embedded systems by considering UART as an example.
b) Illustrate IEEE 1394 Firewire protocol with suitable example.

5. a) Explain various types of real-time tasks.
b) Describe the process of resource sharing.

6. a) Explain how message queues are used for communication among processes.
b) Write notes on semaphore functions related to RTOS concepts.

7. a) Explain briefly about Host and Target machines.
b) Describe various exceptions in ARM processor.

8. a) Discuss the process of Systems Synthesis and Hardware/ Software Co-Design.
b) Explain the concept of intellectual property codes.

CODE No.:10BT70502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2016

SOFTWARE TESTING TECHNIQUES

[Computer Science and Systems Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Distinguish between structural and functional testing.
b) Discuss in detail about the remedies for test bugs.

2. Discuss the control flow graphs in detail.

3. a) "Implementation of a transaction flow is usually implicit in the design of the systems control structure and database". Explain.
b) Write short notes on data flow testing basics.

4. a) Explain in detail about the ugly and nice domains.
b) Write short notes on interior and boundary points.

5. a) What is the looping probability of a path expression? Write and explain the arithmetic rules with an example.
b) Explain the applications of paths and regular expressions.

6. Explain with suitable example, the rules for conversion of specifications into state graphs.

7. Explain the state graphs in detail.

8. a) Give brief description on the different types of check points.
b) What is synchronization point? Why we need synchronization and also explain how to add synchronization points?

CODE No.:10BT71007

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2016

TELEMETRY AND TELECONTROL

[Electronics and Control Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain the principle and operation of hydraulic and optical telemetry system.

2. a) Describe the working of Synchro Transmitter and Receiver Telemetry system.
b) With a neat sketch, explain the operation of Force Balance current system.

3. Discuss the telemetry standards of baseband configuration in terms of frequency as stipulated by IRIG. What are PBW and CBW in this context?

4. a) Sketch the QAM modulation scheme and explain. Also draw the constellation diagram.
b) Why synchronization is required in all TDM systems? Explain.

5. Discuss in detail about
i) Telemetry and Telecontrol service
ii) Telemetry and Telecontrol subsystems.

6. a) How is propagation of light supported in a fibre optic cable? What is the critical angle of incidence and on what factors does it depend?
b) In a fibre optic cable the refractive indices of the core, cladding and air are 1.59, 1.56 and 1.00 respectively? Calculate the critical incidence angle and the numerical aperture.

7. Discuss in detail about
i) Microwave transmitter
ii) Microwave receiver.

8. a) What is meant by remote regulation? Explain about remote regulation with example.
b) List out the signal apparatus used for Telecontrol installation.

CODE No.:10BT71202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2016

MOBILE COMPUTING

[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) Mention the GSM mobile services and new data services.
b) Explain the process of localization in GSM.

2. a) What is exposed terminal problem? Describe the protocol machines for multiple access with collision avoidance.
b) "Barker codes have good autocorrelation". Justify.

3. a) Mention the differences between infrastructure and adhoc networks.
b) Explain the architecture of Bluetooth with a neat sketch.

4. a) Explain Dynamic Host Configuration Protocol.
b) Mention the advantages and disadvantages of snooping TCP.

5. Explain power aware and context aware computing.

6. Explain various data delivery mechanisms in mobile computing.

7. What is MANET? Explain the properties and applications of MANETs.

8. a) Explain wireless transport layer security in WAP.
b) Explain the following:
i) Connected Limited Device Configuration (CLDC).
ii) Connected Device Configuration (CDC).

CODE No.:10BT71301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2016

NEURAL NETWORKS AND FUZZY SYSTEMS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is ANN? Explain different ANN Architectures.
b) Describe Mc-Culloch Pitts model of neuron.

2. a) Explain the different categories of learning.
b) Write short notes on Learning Vector Quantizer.

3. a) Write short notes on full CPN.
b) Explain about Hopfield network algorithm.

4. a) Explain Min-Max composition with example.
b) Explain fuzzy properties related to Intersection and Union.

5. a) Compare fuzzy sets and classical sets.
b) Explain the properties of fuzzy sets.

6. a) Explain centroid method and mean of maxima method.
b) What is the role of membership function in fuzzy logic? Mention various membership functions.

7. a) Describe about fuzzy rule based system.
b) Write short notes on control system design problem.

8. a) Explain how ANN is used for load forecasting.
b) Explain how fuzzy logic is used for DC Motor speed control.

CODE No.:10BT80103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2016

WATERSHED MANAGEMENT

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the objectives of watershed development?
b) Explain the various approaches available for management of watersheds.

2. a) What is the basic data that is required for watershed development?
b) Explain any two characteristics of watershed.

3. What is meant by erosion? Explain the various types and the effects of erosion.

4. Explain the various measures that can be implemented to control the erosion.

5. a) What are check dams?
b) Explain catchment harvesting.

6. a) What is meant by reclamation? How do you reclaim saline and alkali soils?
b) Give the land capability classification.

7. What is meant by soil enrichment? How do you achieve the same?

8. a) How do you prepare action plan for watershed management?
b) How do the people should participate in watershed related activities?

CODE No.:10BT80106

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2016

PRESTRESSED CONCRETE

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Explain the following post tensioning methods with neat sketches.
i) Gifford-Udall system. ii) Hoyer system.

2. State the types of prestressing systems and explain any two with neat sketches.

3. A post-tensioned prestressed concrete beam of 16 m span is subjected to an initial prestress of 1458 kN. Profile of the cable is parabolic with the maximum eccentricity of 520 mm at the centre of the span.
f_{ck} = 40 N/mm^2 . Take the following additional data:
A = 2.42 **x** 10^5 mm^2; I = 5.30 **x**10^{10} mm^4; A_s =1386 mm^2; f_s=1059 N/mm^2 at transfer;
E_s= 2.1 **x** 10^5 N/mm^2. E_c= 0.382 **x** 10^5 N/mm^2, μ= Friction coefficient = 0.25.
Wobble correction factor=K= 0.0015/m
Determine the following losses in prestress:
i) Loss due to elastic shortening ii) Loss due to shrinkage in concrete
iii) Frictional loss iv) Creep in concrete

4. A straight precast pretensioned beam of I-section is to be designed to support a uniformly distributed load of 8 kN/m in addition to its self weight. The effective span of the beam is 9 m. Use: concrete of grade M45 with permissible compressive stress in concrete at transfer and working load as 15 N/mm^2, 5 mm diameter high tensile steel wires of ultimate tensile strength 1600 N/mm^2 which are initially stressed to 1200 N/mm^2. Design the cross section of the girder as Class I member. Assume losses to be 20%.

5. Design a post tensioned rectangular beam which carries a imposed load of 14 kN/m over a span of 10 m. Stress in concrete is limited to 18 N/mm^2 and 1.7 N/mm^2 in tension at all stages. Assuming the loss of prestress as 20% and width of section is restricted to 300 mm.

6. a) Explain the effect of varying the ratio of depth anchorage to the depth of end block on the distribution of bursting tension.
b) How the stress distribution in the end block of a prestressed concrete beam occur with a single and double anchor plate.

7. Explain step by step procedure for design of composite prestressed post tensioned beam for unpropped condition. Sketch the stress distribution across the depth of the beam at various stages.

8. A PSC beam of breath 240 mm and depth 300 mm is simply supported on an effective span of 6.0 m. It is prestressed by a parabolic cable with an eccentricity of 75 mm below the centroid at the mid span section and 45 mm above centroid at the support section. Prestressing force is 480 kN. Calculate the initial midspan deflection. Assume the unit weight of concrete as 25 kN/m^3 and modulus of elasticity of concrete as 2.5 **x** 10^4 N/mm^2.

CODE No.:10BT80202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2016

DISTRIBUTION OF ELECTRICAL POWER

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the following :
i) Demand factors ii) Connected load
iii) Utilization factor iv) Coincidence factor
b) Derive the relationship between load factor and loss factor.

2. a) What is voltage square factor?
b) Give one line diagram of loop (ring) type primary feeder system and mention the difference component parts. What are the considerations for planning loop (ring) feeders?

3. Derive the voltage drop and power loss of non-three phase distribution systems and compare to the 3-phase balanced systems.

4. a) What are the different protective devices used in distribution system? Give comparison between them.
b) What are the common faults in a single phase 2-wire and 3-wire system? Explain how faults current is computed with proper single line diagrams.

5. a) Explain the need for p.f improvement in distribution systems.
b) Explain how reductions in line current and hence power losses are obtained with p.f improvement.

6. a) Explain the effect of Automatic Voltage Regulator (AVR).
b) Explain about line drop compensation.

7. Examine the present trend for the future distribution system planning.

8. Describe the features of a typical distribution automation system.

CODE No.:10BT80301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2016

WORLD CLASS MANUFACTURING

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. Describe world class excellent organizations including Japanese companies and their approach towards world class manufacturing.

2. a) Discuss Shingo's approach to quality management.
b) Explain the steps to be followed for the implementation of TPM.

3. Give an overview of business process reengineering considering;
i) what it is?
ii) what it does?
iii) what it requires?
iv) what is assumed with suitable examples?

4. Elaborate the concept and functions of KAIZEN philosophy.

5. Working as an individual or in a team of three or more people, perform an internal audit and write a report on four elements at a local organization.

6. What is the importance design for Six Sigma? Discuss design for Six Sigma in brief.

7. a) List the elements of ISO 9000.
b) Explain in detail the Quality Function Deployment (QFD).

8. a) Explain basic principles of concurrent engineering.
b) Give arguments for and against corporate social responsibility.

CODE No.:10BT80303

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2016

NON-TRADITIONAL MACHINING PROCESSES

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Write any four prominent advantages of unconventional machining methods when compared to conventional methods.
b) Compare any four unconventional machining process based on the type of energy employed.
c) Write the important characteristic of any three unconventional machining processes.

2. What are the various process parameters of Ultrasonic Machining? What is the influence of each of these process parameters on metal removal rates?

3. List out the various process parameters of the Abrasive Jet Machining. What is the influence of each of these process parameters on material removal rates?

4. Describe the working principle of Electro Chemical Machining process with a neat diagram. What are the elements in the process?

5. a) Explain how the machine tool selections influence the characteristics of spark eroded surface.
b) With neat diagram, explain in detail about mechanics of metal removal rate in EDM process and mention its applications and limitations.

6. a) Explain with a neat sketch the construction and working of LBM and mention their applications and limitations.
b) Compare the working principle, merits and demerits of electron beam thermal and non thermal processes.

7. a) Explain the plasma arc matching process. Discuss the advantages, limitations and applications of Plasma Arc Machining (PAM).
b) Write in detail about metal removal mechanism and also discuss the effect of process parameters, accuracy and surface finish in PAM.

8. a) With the help of a neat sketch, explain abrasive flow finishing.
b) Explain the process of selective laser sintering.

CODE No.:10BT80307

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2016

SUPPLY CHAIN MANAGEMENT

[Mechanical Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Discuss briefly decision phases of a Supply Chain.
b) Explain, why achieving strategic fit is critical to a company's overall success.

2. a) Describe the major obstacles that must be overcome to manage a supply chain successfully.
b) What are the main drivers of transportation decision within a firm?

3. Explain the concept of economies of scale in supply chain. How do you determine the optimum level of inventory in supply chain management?

4. What is bull whip effect? Discuss the behavioral and non behavioral causes of bull whip effect.

5. a) Discuss the impact of the internet and e-commerce on supply chain management.
b) What is the role of channels of distribution in the outbound logistics system? How this role has been changing in recent years?

6. a) In what ways, do industry initiatives like ECR, VMI and CPFR help firms in achieving supply chain integration?
b) What are the main transportation strategies used by firms?

7. a) State the requirements of Global strategy implementation.
b) Briefly discuss dimensions of Customer Value.
c) Explain different measures of Customer Value.

8. How to designing the supply chain network? What are the factors influencing the network designing?

CODE No.:10BT80401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2016

CELLULAR AND MOBILE COMMUNICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain various generations in Cellular Mobile Communications.
b) Discuss different types of fading mechanisms in mobile radio environment.

2. a) Explain the terms Handoff mechanism and Cell splitting.
b) Derive equation for C/I in case of Omni-directional antenna systems.

3. a) Derive the expression for the received power in a free space propagation model.
b) Obtain the expression for the path loss from a point to point prediction model.

4. a) Derive power received in free space propagation model.
b) Discuss the Foliage loss.

5. a) Explain different types of space - diversity mobile antennas.
b) Describe various types of synthesis issues and sum of patterns.

6. a) Explain the features of TDMA technique.
b) Discuss the features of CDMA digital cellular standard.

7. a) What is dropped call rate and explain how do you evaluate it.
b) Explain about cell site hand off and forced handoffs.

8. Write short notes on;
a) GSM Channels
b) 3G
c) TDMA

CODE No.:10BT80402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2016

WIRELESS COMMUNICATIONS AND NETWORKS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain in detail about packet radio protocols.
b) Explain the features of FDMA.

2. a) Explain the difference between 1G and 2G Networks.
b) What is the significance of routing?

3. a) Explain briefly about WML scripts.
b) Write a short note on the security aspects of WLL.

4. a) Explain WML scripts and its components.
b) Write about Wireless Datagram Protocol.

5. a) Explain different wireless LAN applications.
b) Write notes on 802.11 physical layer.

6. a) Explain the operations of LMP.
b) Differentiate between LMDS and MMDS applications of WLL technology.

7. a) What is a HIPERLAN?
b) Explain WIMAX.

8. a) What is WPAN? Explain in detail.
b) List out characteristics of MANETs.

CODE No.:10BT80406

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2016

SATELLITE COMMUNICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Write about evolution of satellite communication and mention the advantages of satellite communications over terrestrial communications.
b) Discuss about the frequency allocations of satellite services and about future trends of satellite.

2. a) What are Kepler's three laws of planetary motion?
b) What is look angle and how to determine it?

3. a) Describe about Altitude and Orbit Control Subsystem (AOCS) of satellite link.
b) Explain about various types of transponders used in satellite communication.

4. a) Describe about Ku-band uplink and down link design with neat sketches of satellite TV distribution system.
b) A satellite at a distance of 37,000km from a point on earths surface radiates a power 15W from an antenna with a gain of 20db in the direction of the observer. The satellite operates at 12GHz. Find the;
i) Flux density
ii) The received power of the antenna with effective area of $10m^2$.
iii) EIRP
iv) Path Loss

5. a) Draw the TDMA frame structure and explain.
b) Illustrate the problem of inter modulation in multicarrier signal transmissions.

6. a) Write about earth station transmitter.
b) Explain tracking subsystem of an earth system.

7. a) Explain about delay, throughput system considerations of LEO satellite system.
b) Discuss in detail about the operational NGSO constellation designs.

8. a) Explain differential GPS.
b) With the help of suitable diagram, describe the working of home receiver units in direct broadcast satellite television.

CODE No.:10BT80502

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2016

HUMAN COMPUTER INTERACTION

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define User Interface. Explain the two components in User Interface.
b) What are the benefits of Good Design? Explain.
c) Explain the impact of graphics in screen design.

2. Describe the similarities and differences between the graphical user interface and the web user interface.

3. a) Explain the classification of the techniques for determining requirements.
b) List and define the perceptual characteristics of Human beings.

4. a) Explain about the properties that provide a visually or aesthetically pleasing composition possessing.
b) Discuss, how a poor screen design can distract the user and what a user expect in good screen design.

5. a) What are the different types of windows? Explain.
b) Explain the guidelines for window operations.

6. a) What points are to be noted in creating images as icons?
b) What is image map? What is its use? What are its advantages and disadvantages?
c) What is meant by combining mediums? What are its characteristics?

7. a) Define software tool? Explain the Transition and State chart diagrams with notations.
b) Write a short note on GUI Toolkit Layer.

8. a) List and explain various indirect control pointing devices.
b) What are the different kinds of technologies used in speech recognition? Explain.

CODE No.:10BT80504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2016

CLOUD COMPUTING

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Illustrate the evolution of computing and middleware technologies.
b) Highlight the features of Edge Computing with respect to Customer Premises Equipment (CPE).

2. a) Explain traditional approaches to SLO management and types of SLA with its key contractual components.
b) "I want to run Windows on my Mac. I know I can either dual boot Windows with BootCamp or run Windows on my Desktop using VMware Fusion". Suggest me the best method by considering the factors Cost, Performance, Hard Drive space and File access.

3. a) Explain the virtualization process.
b) How, use of cloud computing results in money saving. Consider the three models of cloud computing.

4. Explain different cloud computing architectures and their differences.

5. a) Bring out the difference between SOAP and REST.
b) Discuss the concept of Cloud Supply Chain (C-SC) and compare Traditional and Emerging ICT supply chains.

6. What is OS Virtualization? Explain about VM ware and Ubantu (Server edition).

7. What is Para Virtualization? Explain about storage Virtualization technologies and its management.

8. a) Explain Virtualization and its types with suitable example.
b) Define the following terms and give examples for each.
i) SaaS ii) PaaS iii) IaaS

CODE No.:10BT81001

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2016

INDUSTRIAL ELECTRONICS

[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) Briefly explain the device that is used for reducing to zero the drift in D.C. amplifiers.
b) Explain Darlington emitter follower in detail.
c) What is the main trouble in D.C. amplifiers? Mention any one method to overcome it.

2. a) Define voltage regulator and write a brief note on functions performed by voltage regulator.
b) Explain the block diagram of a series voltage regulator.
c) Define regulation factor.

3. Describe the method of Class A commutation or self commutation of SCRs. Draw the commutation circuits and current waveforms for
a) Load resistor R in series with capacitor C.
b) Load resistor R in parallel with capacitor C.

4. a) Explain the different ways of controlling the conduction of an SCR in detail.
b) Write a brief note on static circuit breaker used in power control.

5. a) Explain the construction and functioning of DIAC
b) With neat schematic diagram, explain the two-quadrant type - A chopper.

6. a) Explain in detail about adaptive control system.
b) What are the benefits of adaptive control machining?

7. a) With neat circuit, diagram and waveforms explain the working of 555 IC timer as astable multivibrator.
b) Describe the principle of working of electric ARC welding with necessary diagrams.

8. a) Discuss the various sources of thermal losses in dielectric heating.
b) What are the merits and drawbacks of induction heating?

CODE No.:10BT81201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Regular/Supplementary Examinations April - 2016

SERVICE ORIENTED ARCHITECTURE

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. Define Service Oriented Architecture (SOA). Explain principles and benefits of SOA.

2. a) Describe Web Services Framework.
b) Explain business activity protocols and the role of business activity coordinator.

3. a) Describe WS-Eventing specification.
b) Write about policies.

4. Explain in detail anatomy of a Service Oriented Architecture.

5. Explain the end point reference and message information eiders with respect to addressing.

6. What are the common layers required by a development and runtime platform for building Service Oriented Architecture?

7. a) Write about service interface design tools.
b) Describe the step-by-step process of application service design.

8. Describe Root element and Series of Common child element of WS-BPEL process definition.

CODE No.:10BT6HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Supplementary Examinations June - 2016

MANAGEMENT SCIENCE

[Civil Engineering, 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. "Management process is considered to consist of certain functions". Elaborate and list these functions in a logical order.

2. What do you mean by line organization structure? What are its benefits and limitations? Discuss the situations in which it is suitable.

3. a) Define work study. Explain the steps involved in method study.
b) What is the significance of control chart? List the basic steps involved for drawing variable control charts.

4. a) State steps involved in ABC analysis. How are the A class, B class and C class items controlled?
b) List out various channels of distribution and explain their characteristics briefly.

5. a) Outline the policies and principles of HRM.
b) Explain different merit rating methods.

6. The utility data for a network are given below. Determine the total, free, independent and interfering floats and identify the critical path.

Activity :	0-1	1-2	1-3	2-4	2-5	3-4	3-6	4-7	5-7	6-7
Duration:	2	8	10	6	3	3	7	5	2	8

7. a) Define entrepreneur. How they are helpful to the society?
b) Write notes on entrepreneurial decision process.

8. a) What is Supply Chain Management? Explain.
b) Write notes on intellectual property rights.

CODE No.:10BT70405

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Supplementary Examinations June - 2016

EMBEDDED AND REALTIME SYSTEMS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Define the term 'embedded system'. What are the design challenges in embedded system?
b) Write notes on RT-level Combinational logic of single purpose processors used in embedded system design.

2. a) Explain the development environment of general purpose processors used in an embedded system design with an example.
b) Explain the importance of the ASIPs processors in embedded systems.

3. a) What is meant by extended finite state machines? Also describe its importance.
b) Give a brief description of message passing and shared data.

4. a) Briefly describe half duplex RS-485 network topology.
b) Describe I^2C bus with salient features and its various applications.

5. a) Explain about Event driven Scheduling.
b) Write notes on Task and Task States.

6. a) Give brief description of memory management.
b) Explain briefly the problem of priority inversion.

7. a) Give the salient features of THUMB instructions in ARM processor.
b) Discuss various flags used in ARM processor.

8. Explain the following related to embedded system design technology.
i) Logic Synthesis.
ii) Hardware/Software co- simulation.

CODE No.:10BT71202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Supplementary Examinations June - 2016

MOBILE COMPUTING

[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) What is handover? Explain various types of handover.
b) Explain limitations of Mobile devices.

2. a) Why is specialised MAC needed in Mobile communication?
b) Explain any two reservation TDMA mechanisms.

3. Describe the system and protocol architecture of IEEE 802.11 adhoc-wireless LAN.

4. a) Explain about Tunneling and encapsulation in Mobile IP.
b) What is Mobile TCP? What are the Advantages of Mobile TCP?

5. a) What is database hoarding? Describe various cache invalidation mechanisms.
b) What is context aware computing? Explain.

6. Explain selective tuning techniques.

7. a) What are the applications of MANETs ?
b) Explain routing algorithms in MANETs.

8. Explain Wireless Application Protocol.

CODE No.:10BT71301

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Supplementary Examinations June - 2016

NEURAL NETWORKS AND FUZZY SYSTEMS

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) List out the applications of ANN.
b) Generate the output of **OR, NOT** function using McCulloch-Pitts Neuron.

2. a) What is learning? Explain any of the two learning rules.
b) Explain Kohenen Self Organization Networks.

3. a) Explain architecture of Hopfield Network.
b) Explain training phases of full CPN in detail.

4. Describe about the architecture of BAM energy function.

5. a) Write short notes on fuzzy operations.
b) Explain fuzzy properties related to Union.

6. a) Explain centroid method and mean of maxima method.
b) What is the role of membership function in fuzzy logic?
Mention various membership functions.

7. a) Explain the formal model of linguistics using fuzzy sets.
b) What are the assumptions in Fuzzy Control System design?

8. a) Explain how fuzzy logic is used for cruise control application.
b) Write short notes on control and fault diagnosis.

CODE No.:10BT80103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Supplementary Examinations June - 2016

WATERSHED MANAGEMENT

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain watershed management with respect to integrated and multidisciplinary approach.
b) Give the concept and necessity of watershed development.

2. a) What is the basic data that is required for watershed development?
b) Explain any two characteristics of watershed.

3. a) Give the effect of erosion on land fertility and land capability.
b) How do you estimate the soil loss due to erosion?

4. Write short notes on the following.
i) Gully control
ii) Brushwood dam
iii) Bunding

5. a) What is artificial recharge? Explain.
b) What are form ponds and percolation tanks?

6. a) Give some methods to reclaim saline soils.
b) How do you manage forest and agricultural lands?

7. a) Explain the various cropping patterns.
b) Give the role of ecosystem in watershed management.

8. a) How do you plan the various activities related to watershed management.
b) How do people should participate in watershed related activities for better management of watershed?

CODE No.:10BT80106

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Supplementary Examinations June - 2016

PRESTRESSED CONCRETE

[Civil Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What are the merits and demerits of prestressed concrete construction over reinforced concrete construction?
b) Explain why mild steel and normal strength concrete are not recommended in prestressed concrete.

2. a) Distinguish between pre-tensioning and post- tensioning.
b) Explain Freyssinet system of post tensioning.

3. A prestressed concrete beam, 200mm wide and 300mm deep, is prestressed with wires (area = 320mm^2) located at a constant eccentricity of 500mm and carrying an initial stress of 1000 N/mm^2. The span of the beam is 10m. Calculate the percentage loss of stress in wires, if the beam is post-tensioned, using the following data:
E_S = 210 KN/mm^2 and E_C = 35 KN/mm^2; Relaxation of steel stress = 5 % of initial stress.
Slip at anchorage = 1mm ; Shrinkage of concrete = 200×10^{-6} for post-tensioning.

4. A prestressed concrete beam (span = 10m) of rectangular section, 120mm wide and 300mm deep, is axially prestressed by a cable carrying an effective force of 180 kN. The beam supports a total uniformly distributed load of 5 kN/m which includes the self-weight of the member. Compare the magnitude of the principal tension developed in the beam with and without the axial prestress. Assume any other missing data.

5. A composite T-beam is made up of a pre-tensioned rib 100mm wide and 200mm deep, and a cast in-situ slab 400mm wide and 40mm thick having a modulus of elasticity of 28 kN/mm^2. If the differential shrinkage is 100×10^{-6} units, determine the shrinkage stress developed in the precast and cast in situ units.

6. a) Explain the effect of varying the ratio of depth anchorage to the depth of end block on the distribution of bursting tension.
b) How the stress distribution in the end block of a prestressed concrete beam occur with a single and double anchor plate.

7. a) What are the ways to improve the shear resistance of structural concrete members by prestressing techniques?
b) State Guyon's and Mugnel method.

8. A post tensioned concrete beam of span 9m has a rectangular section of 275mm wide and 450mm deep is prestressed by two cables of area 500mm^2 each, which are initially prestressed to 1500 N/mm^2. The eccentricity of the cables throughout the length of the beam is 95mm. Find the deflection at the centre when the beam supports its own weight, ignoring all the losses. What would be the deflection at the centre when the beam carries an imposed load of 16 kN/m and there is a 15% loss of prestress? Assume concrete weight as 24 kN/m^3. Modulus of elasticity of concrete as 35 kN/mm^2.

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CODE No.:10BT80202

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Supplementary Examinations June - 2016

DISTRIBUTION OF ELECTRICAL POWER

[Electrical and Electronics Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the need for distribution automation.
b) Explain the various classifications of loads with their characteristics in detailed.

2. a) Explain various types of radial primary feeders with diagrams.
b) Explain various factors that influence the voltage levels in the design and operation of the distribution system.

3. a) What are the advantages for adopting 3-phase, 4-wire distribution LT supplies and 3-phase, 3-wire for high-voltage distribution?
b) Show that power loss due to load currents in conductors in a single-phase two wire ungrounded system with full capacity neutral (3 wire system) is six times than that in the equivalent 3-phase 4-wire system.

4. a) Write the objectives of the distribution system protection.
b) Explain operation of Fuse and line sectionalizer.

5. Define:
i) Voltage Regulation ii) Voltage drop iii) Nominal voltage
iv) Rated voltage vi) Maximum voltage vii) Minimum voltage

6. a) Explain the effect of AVR on voltage control.
b) Explain the basic functions of booster transformer and how it increases the line voltage.

7. a) What are the various factors that affect the distribution system planning?
b) Discuss the objectives of system planning.

8. a) What are the benefits of distribution automation?
b) Explain the different types of function of master DA software.

CODE No.:10BT80401

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Supplementary Examinations June - 2016

CELLULAR AND MOBILE COMMUNICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the difference between analog and digital cellular systems.
b) Explain how and why cell splitting is done. What are various considerations of components of cellular system?

2. a) Discuss the cell - splitting issues.
b) Describe CCI and its reduction.

3. a) Derive the expression for the phase difference between a direct path and a reflected path.
b) Explain mobile propagation in near-in distance and long distance.

4. Discuss the path loss issues from point to point prediction model both in obstructive and non - obstructive conditions.

5. a) Which antenna is used for interference reduction? Explain how interference can be reduced at cell site.
b) Define Channel Assignment. Explain the channel sharing and borrowing concept in mobile communications.

6. a) Why there is a constant standard deviation along a path-loss curve and also explain the straight-line path-loss slope.
b) Explain the general formula of a point-to-point model (Lee model) and also mention the merit of the point-to-point model.

7. a) Why are Handoff's needed and explain various types of Handoff's?
b) What are dropped calls and how they can be reduced?

8. Write short notes on the following:
i) Multiple access schemes.
ii) GSM Channels.

CODE No.:10BT80402

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Supplementary Examinations June - 2016

WIRELESS COMMUNICATIONS AND NETWORKS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) What is meant by near-far effect in CDMA and explain how this effect is eliminated.
b) If a normal GSM time slot consists of six training bits, 8.25 guard bits, 26 training bits and two traffic bursts of 58 bits of data, find the frame efficiency.

2. a) Explain the difference between 1G and 2G Networks.
b) What is the significance of routing?

3. a) Explain the Common Channel Signaling.
b) Write about Broadband ISDN and its Services.

4. a) Explain WAP service and WAP session protocol clearly.
b) Discuss about wireless transaction in detail.

5. a) Explain the transmission techniques that are used in informed LAN.
b) Write short notes on IEEE802 services.

6. a) What is LLC ? Explain.
b) Draw the general Architecture of WLL.

7. a) What is GPRS? How it works? Give applications.
b) What is a radio wave? Explain all the details of radio wave propagation.

8. a) Explain the HIPERLAN1 characteristics and its layers.
b) Write about WiMAX and mention applications.

CODE No.:10BT80406

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Supplementary Examinations June - 2016

SATELLITE COMMUNICATIONS

[Electronics and Communication Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the difference between the active and passive satellite systems. Discuss their merits and demerits.
b) List Kepler' laws and derives one of them.

2. a) Define the following:
i) Azimuth ii) Sub-satellite Point iii) Geosynchronous satellite.
b) Prove that the orbital period of a geostationary satellite is equal to 24 hr.

3. a) List the satellite sub-systems and explain power and communication sub-system.
b) Give the name of the space craft antennas and explain any two in detail with diagrams.

4. a) Derive an expression for the power received by earth station from satellite transmitter and also for carrier to noise ratio at the demodulator of the receiver.
b) Discuss about c-band downlink budget in satellite communications in clean air and in rain, atmospheric conditions.

5. a) Brief about various types of multiple accessing techniques. Explain about FDMA technique.
b) A VSAT earth station uses a TDMA network using 54MHz bandwidth transponder on a domestic Ku-band GEO satellite. The VSAT earth station has a 1m antenna that transmits a single 64kbps signal at 14GHz. Calculate the required uplink power. The following system parameters are used.

$(C/N)_{up}$ = 20db	Earth station gain = 41.5db
Satellite antenna gain = 32 db	Edge of beamloss = 3db
Pathloss at 14 GHz = 207.1db	Receiver noise bandwidth = 30MHz
Transmitter noise temperature = 500k	Atmospheric losses = 1db

6. a) Write about earth station receiver.
b) What is terrestrial interface?

7. a) Write about the orbital considerations of LEO satellite system.
b) Discuss in detail about the operational NGSO constellation designs.

8. a) Explain satellite signal acquisition.
b) Describe Global Positioning System.

CODE No.:10BT80504

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Supplementary Examinations June - 2016

CLOUD COMPUTING

[Computer Science and Engineering]

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

Answer any FIVE questions
All questions carry equal marks

1. a) "Cloud computing is not a new concept". Comment.
b) What are the benefits are limitation of cloud computing?
c) "The future of computing is cloud". Comment.

2. a) Discuss the following:
i) SOA ii) Web Services iii) Google File System
iv) Application Server v) Big Data

3. a) Explain the virtualization process.
b) How use of cloud computing results in money saving? Consider the three models of cloud computing.

4. a) How **Ubuntu** supports virtualization?
b) How **Microsoft** supports virtualization?

5. a) "Security is one of the major issues associated with cloud computing". How security is provided in the current cloud environment.
b) What are the security related problems associated with cloud computing?

6. a) What are the steps in disaster recovery planning?
b) How the capacity is planned in cloud environment?

7. a) Write short notes on the following:
i) Grid Computing ii) Edge Computing
b) Illustrate cloud computing stack and cloud deployment models.

8. Write short notes on the following:
i) Graph Reduction.
ii) Windows Azure.
iii) Yahoo Hadoop.

CODE No.:10BT81201

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC10) Supplementary Examinations June - 2016

SERVICE ORIENTED ARCHITECTURE

[Information Technology]

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

Answer any FIVE questions
All questions carry equal marks

1. a) "Contemporary Service Orientation Architecture implements layers of abstraction". Substantiate this statement.
b) Make a comparison of Service Orientation Architecture with client server architecture.

2. a) Discuss primitive and complex service activities.
b) Write about service description advertisement and discovery.

3. What are different types of SOAP nodes involved with processing a message?

4. Explain the Common Principles of Service Orientation in detail.

5. Explain Business service layer in detail.

6. What are the common layers required by a development and runtime platform for building Service Orientation Architecture?

7. Explain Entity-Centric and Task-Centric business Service design in detail.

8. a) Explain any three attributes used in WS-Policy language.
b) Discuss XML-Signature elements.

CODE No.:10MC1HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC10) Supplementary Examinations December - 2015

ACCOUNTING AND FINANCIAL MANAGEMENT

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. What you meant by Accounting concepts? Explain the following concepts.
   a. Business Entity concept
   b. Money Measurement concept
   c. Dual concept.

2. From the following balances of Balaji paints prepare Trading Account, Profit and Loss Account for the year ending 31st December 2010 and Balance sheet as on the date.

	Rs		Rs
Purchases	1,40,000	Commission Received	10,000
Sales	2,88,000	Debtors	50,000
Opening Stock	30,000	Salaries	48,000
Machinery	80,000	Insurance	12,000
Cash	20,000	Buildings	1,50,000
Creditors	5,000	Bills Payable	20,000
Wages	30,000	Furniture	5,000
Printing & Stationary	17,000	Interest received	8,000
Capital	2,50,000	Patents	40,000
Factory Rent	3,000	Bank overdraft	34,000

Adjustments:

i. Closing stock Rs 55,000
ii. Outstanding printing charges Rs. 3,000
iii. Insurance paid in advance Rs. 2,000
iv. Unpaid wages Rs. 5,000
v. Commission Received in advance Rs. 1,000
vi. Interest accrued but not received Rs. 2,000.

3. Explain the importance of Ratio Analysis. Discuss any five ratios other than liquidity ratios in detail with suitable examples.

4. Give a comprehensive note on the causes for Over-capitalization and Under-capitalization.

5. Define Financial Management. “Maximization of Profit is regarded as the proper objective of investment decision. But it is not exclusive of maximizing shareholders wealth” - Do you agree? comment.

6. Why the cash flow statement is considered necessary in addition to the profit and loss account and balance sheet? Discuss with suitable examples.

7. What are the sources of raising capital? Explain the different sources of long-term financing with suitable examples.

8. Krishna Enterprises Ltd. is contemplating the purchase of a machine. Two machines A and B are available each at Rs. 25,00,000. In computing the profitability of machines, a discount rate of 10% is used. Earnings after taxation are expected to be as follows:

NET CASH FLOW (Amount in Rupees)

Year	Machine 'A'	Machine ' B'
1.	75,000	25,000
2.	1,00,000	50,000
3.	1,25,000	1,00,000
4.	75,000	1,50,000
5.	50,000	1,00,000

Indicate which machine would be profitable investment using the following

a. Pay Back period

b . Net Present Value method.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC14) Regular/Supplementary Examinations December - 2015

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 **$(P \rightarrow (Q \wedge R)) \wedge (7P \rightarrow (7Q \wedge 7R))$.** 6 Marks

   b) Show that **$((P \vee Q) \wedge 7(7P \wedge (7Q \vee 7R))) \vee (7P \wedge 7Q) \vee (7P \wedge 7R)$** is a tautology. 6 Marks

(OR)

2. a) Show that the conclusion C follows from the premises **$H_1 : 7P \vee Q$, $H_2 : 7(Q \wedge 7R)$, $H_3 : 7R$, C: 7P.** 6 Marks

   b) Show that **$(x)(P(x) \rightarrow Q(x)) \wedge (x)(Q(x) \rightarrow R(x)) \Rightarrow (x)(P(x) \rightarrow R(x))$.** 6 Marks

UNIT-II

3. a) Let **$f(x) = x+2$, $g(x) = x-2$** and **$h(x) = 3x$ for $x \in R$**, where R is the set of real numbers. Find **gof; fog; fof; gog; foh; hog; hof;** and **fohog.** 6 Marks

   b) Let F_x be the set of all one - to one onto mappings from **x** onto **x**, where **x = {1,2,3}**. Fined all the elements of F_x and find the inverse of each element. 6 Marks

(OR)

4. a) If **A = {1,2,3,5,3 0}** and R is the divisibility relation, prove that (A,R) is a lattice but not a distributive lattice. 6 Marks

   b) Show that the function $[x/2]$ which is equal to the greatest integer which is $\leq x/2$ is primitive recursive . 6 Marks

UNIT-III

5. a) Show that every cyclic group of order n is isomorphic to the group **$< Z_n, +n >$.** 6 Marks

   b) State and prove the inclusion-exclusion principle. 6 Marks

(OR)

6. a) Prove by Mathematical induction that $6^{n+2} + 7^{2n+1}$ is divisible by 43 for each positive integer **n**. 7 Marks

   b) State and prove the pigeonhole principle. 5 Marks

UNIT-IV

7 Solve the recurrence relation $a_n - 9a_{n-1} + 26a_{n-2} - 24a_{n-3} = 0$ for $n \geq 3$. 12 Marks

(OR)

8 Solve $a_n - 6a_{n-1} + 12a_{n-2} - 8a_{n-3} = 0$ by generating function. 12 Marks

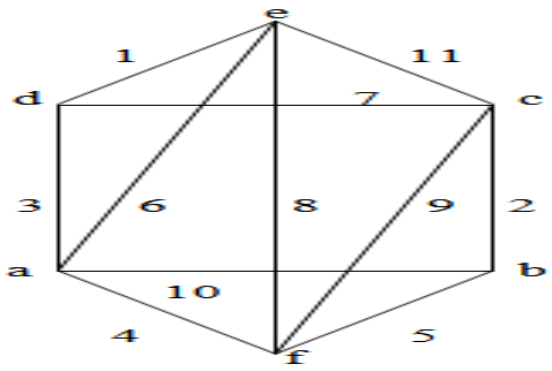
UNIT-V

9 a) Explain Euler and Hamilton paths. 6 Marks

   b) Explain about coloring of graphs and discuss applications of coloring. 6 Marks

(OR)

10 Explain Prim's algorithm and use it to find a minimal spanning tree for the weighted graph. 12 Marks



CODE No.:14MC1HS01 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC14) Regular/Supplementary Examinations December - 2015

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 What do you mean by accounting standards? How do you classify accounting concepts? Explain. 12 Marks

(OR)

2 What is meant by computerized accounting system? Explain the coding logic and master files? 12 Marks

UNIT-II

3 From the following particulars of Mrs. Sharat & Co., you are required to prepare Trading, Profit and Loss account and Balance Sheet for the year ended 31st Dec., 2012. 12 Marks

Particulars	Dr. Rs.	Particulars	Dr. Rs.
Sales	6,50,000	Discount allowed	1000
Sales returns	5000	Discount received	5000
Stock at the beginning	80,000	Salaries	30,000
Purchases	2,90,000	Interest paid	4000
Purchase returns	3000	Furniture	3,00,000
Direct wages	50,000	Buildings	2,00,000
Direct expenses	50,000	Plant and machinery	2,00,000
Carriage inwards	40,000	Cash in hand	10,000
Capital at the beginning	3,00,000	Bills Payable	62,000
Drawings	50,000	Bad debts	3000
Sundry debtors	1,00,000	Reserve for bad and doubtful debts	5,000
Sundry creditors	1,20,000	Closing stock at the end	80,000

Additional information:

i. Outstanding salaries Rs.5000.
ii. Interest on capital at 10% p.a.
iii. Depreciation on plant and machinery at 10% p.a. and buildings at 5% p.a.
iv. Prepaid of interest Rs.1000.
v. Provision for bad and doubtful debts at 10% on debtors.

(OR)

4 The following are the balances of Das Gupta as on 30th June, 2012. 12 Marks

Particulars	Rs.	Particulars	Rs.
Debt balances:			
Cash in hand	5,400	Investments	1,00,000
Cash at Bank	26,300	Patents	75,000
Purchases	4,06,750	Salaries	1,50,000
Returns (in)	6,800	General Exp.	30,000
Wages	84,800	Insurance	6000
Fuel and power	47,300	Drawings	52450
Carriage on sales	32,000	Sundry debtors	1,45,000
Carriage on purchases	20,400	**Credit Balances:**	
Stock (1st July, 2011)	5,760	Sales	9,87,800
Buildings	2,20,000	Returns (out)	5,000
Freehold land	1,00,000	Capital	6,20,000
Machinery	2,00,000	Sundry creditors	63,000
		Rent	90,000

Taking into account the following adjustments, prepare Trading and Profit and Loss account and Balance Sheet as on 30th June, 2012:

i. Stock on hand on 30th June 2012 Rs.68,000
ii. Machinery is to be depreciated at the rate of 10% and patents at the rate of 20%.
iii. Salaries for the month of June, 2012 amounting to Rs.15000 were unpaid.
iv. Insurance includes a premium of Rs.1700 on a policy expiring on 31st Dec., 2012.
v. Bad debts are Rs.7250.
vi. Rent received in advance Rs.10,000

Interest on investment of Rs.12,000 is accrued.

UNIT-III

5 Explain the factors that determine the capital structure of a firm? 12 Marks

(OR)

6 What do you mean by cost of capital? Discuss the factors affecting Cost of Capital? 12 Marks

UNIT-IV

7 Describe the break-even analysis in a detailed manner. Outline the limitations of break-even analysis. 12 Marks

(OR)

8 A machine tools factory has a plant capacity of enough hours 9000. Annual fixed charges are of Rs.50,000 per year. It can produce two products of X and Y. It has three options: make X or make Y, or make some units of X and some units of Y. Look at the following data: 12 Marks

	X	Y
Selling price (Rs)	250	400
Variable cost	100	200
Demand	2500 units	5000 units
Time taken for production	3 hours	5 hours

What product mix will maxmise the net profits of the factory? Calculate the maximum net profit?

UNIT-V

9 What are the principal methods for ascertaining the profitability of a Capital expenditure proposal? 12 Marks

(OR)

10 X Ltd., is considering the purchase of a new machine which will carry out some operations performed by labour. A and B are alternative models. From the following information, you are required to prepare a profitability statement and work out the pay back period and rate of return on investment for each model. 12 Marks

Particulars	Model A Rs.	Model B Rs.
Estimated life	5 Yrs.	6 Yrs.
Cost of machine	1,50,000	2,50,000
Cost of indirect materials	6,000	8,000
Estimated saving in scrap	10,000	15,000
Additional cost of maintenance	19,000	27,000
Estimated saving in direct wages:		
Employees not required	150	200
Wages per employee	600	600

Taxation to be regarded at 50% of profit before charging depreciation. Which model would you recommend?

CODE No.:14MC1HS02 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC14) Regular/Supplementary Examinations December - 2015

PROFESSIONAL COMMUNICATION

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	'Explain how communication plays a key role in the successful running of an organization.	12 Marks
	(OR)	
2	What are the different levels of communication? Define each one briefly.	12 Marks

UNIT-II

3	What is active listening and how does empathy affect listening?	12 Marks
	(OR)	
4	Write an essay on the barriers to effective listening.	12 Marks

UNIT-III

5	Speaking without enthusiasm is a major communication barrier. Explain why this is the case.	12 Marks
	(OR)	
6	If one uses distracting gestures at the time of speaking, the message is lost or misunderstood. Explain using examples from real life.	12 Marks

UNIT-IV

7	Define reading and describe in detail some techniques for improving reading comprehension.	12 Marks
	(OR)	
8	Write an essay on SQ3R Reading Technique.	12 Marks

UNIT-V

9	Identify the drawbacks in your own writing skill with specific reference to the characteristics of good writing.	12 Marks
	(OR)	
10	Write an essay on the elements of style in technical writing.	12 Marks

CODE No.:14MC10101 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC14) Regular/Supplementary Examinations December - 2015

PROGRAMMING THROUGH 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)	Highlight the different rules to be followed to write valid identifiers in 'C' programming	6 Marks
	b)	Differentiate between variables and symbolic constants with example.	6 Marks
		(OR)	
2	a)	Write a note on Variables, Constants and Keywords.	6 Marks
	b)	Differentiate between nested if... else and switch statement with example.	6 Marks

UNIT-II

3	a)	What is an array? How a one-dimensional array will be stored in memory?	6 Marks
	b)	What do you understand by pointers? Give the syntax of declaration of a pointer.	6 Marks
		(OR)	
4	a)	Explain the advantages and limitations of arrays.	6 Marks
	b)	Describe Dynamic Memory Management functions.	6 Marks

UNIT-III

5	a)	Distinguish between local and global variables with suitable examples.	6 Marks
	b)	Write a 'C' program for Fibonacci series using recursion.	6 Marks
		(OR)	
6	a)	Explain user defined functions with suitable examples.	6 Marks
	b)	Write a 'C' program to find factorial of a given number using function.	6 Marks

UNIT-IV

7	a)	Describe the Structure declaration and initialization in 'C' language.	6 Marks
	b)	Write a note on nested structures.	6 Marks
		(OR)	
8	a)	Write enumerated types in 'C' with an example.	6 Marks
	b)	Write a 'C' program for dynamic linked list representation.	6 Marks

UNIT-V

9	a)	What is a file? Describe different types of files.	6 Marks
	b)	Write a brief note on Preprocessor directive statements.	6 Marks
		(OR)	
10		Write a detailed note on operations on files with syntax.	12 Marks

CODE No.:14MC10102 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC14) Regular/Supplementary Examinations December - 2015

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)	What is the need of Compliment? Explain (r's) Complement and (r-1)'s Complement in detail.	6 Marks
	b)	What are Don't Care Conditions? With an example, explain the map with Don't Care Condition.	6 Marks
		(OR)	
2	a)	Explain block diagram of a digital computer in detail.	6 Marks
	b)	Define Minterm and Adjacent Squares. Explain briefly about them.	6 Marks

UNIT-II

3	a)	Show that a JK flip-flop can be converted to a D flip-flop with an inverter between J and K inputs.	7 Marks
	b)	Draw 4-to-1-line multiplexer and explain the operation.	5 Marks
		(OR)	
4		Explain the operation of bi-directional shift register with parallel load.	12 Marks

UNIT-III

5	a)	Explain about various addressing modes with example.	6 Marks
	b)	Compare RISC ***vs.*** CISC.	6 Marks
		(OR)	
6	a)	List different instruction formats with examples.	7 Marks
	b)	Explain briefly about stack organization.	5 Marks

UNIT-IV

7		With a neat Sketch, explain the operation of Common Bus System.	12 Marks
		(OR)	
8	a)	Draw the flow chart for Interrupt cycle and explain Program Interrupt.	6 Marks
	b)	Briefly explain the process of BSA Instruction execution.	6 Marks

UNIT-V

9	a)	What is hit ratio?	2 Marks
	b)	Explain DMA mode of data transfer.	10 Marks
		(OR)	
10	a)	Explain set-associative mapping cache organization.	8 Marks
	b)	Explain source-initiated data transfer using hand shaking.	4 Marks

CODE No.:14MC10103 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC14) Regular/Supplementary Examinations December - 2015

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		Evaluate the given postfix expression (5 6 2 + * 12 4 / -) using a stack and explain.	12 Marks
		(OR)	
2		Explain in brief any two stack applications.	12 Marks

UNIT-II

3	a)	Write an algorithm to insert and delete elements in a linear queue using singly linked list.	6 Marks
	b)	Describe sparse matrix notation.	6 Marks
		(OR)	
4		Mention different types of queues and illustrate the operations with examples.	12 Marks

UNIT-III

5		Write a program to sort the elements using selection sort and explain the iterations with a suitable example.	12 Marks
		(OR)	
6		List and explain the worst, average, best sorting efficiency of bubble, merge and quick sort.	12 Marks

UNIT-IV

7		Explain the process of deletion of a node for a binary search tree.	12 Marks
		(OR)	
8		What is binary tree and explain its traversals.	12 Marks

UNIT-V

9	a)	Illustrate step-by step the insertion of the keys: 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, and 1 in an AVL tree.	6 Marks
	b)	Explain about the LLr, LRr, LLb, LRb imbalances in red black tree with example.	6 Marks
		(OR)	
10	a)	Illustrate graph representations with the help of an example.	6 Marks
	b)	Explain the Prim's algorithm for minimum cost spanning tree.	6 Marks

CODE No.:14MC10101 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC14) Supplementary Examinations June - 2016

PROGRAMMING THROUGH 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)	Describe the basic structure of a 'C' program.	6 Marks
	b)	Explain the need or purpose of Break, Continue and Goto statements.	6 Marks
		(OR)	
2	a)	Describe the characteristics and advantages of 'C' language.	6 Marks
	b)	Write a program in 'C' to print even numbers from 1 to 100.	6 Marks

UNIT-II

3	a)	Write a 'C' program to initialize an array with square of index and print of it.	6 Marks
	b)	Define Pointer and write about any two Pointer applications.	6 Marks
		(OR)	
4	a)	Explain the mechanism of storing values in arrays with an example.	6 Marks
	b)	Write a 'C' program to read from key board and print integers multiplied by two.	6 Marks

UNIT-III

5		Explain the different elements of user defined functions.	12 Marks
		(OR)	
6	a)	Differentiate between pass by value and pass by reference with examples.	6 Marks
	b)	Write a program to find factorial of a number using recursion.	6 Marks

UNIT-IV

7	a)	Explain the syntax of Structure data type in 'C' with an example.	6 Marks
	b)	Write syntax for nested structures with example.	6 Marks
		(OR)	
8	a)	Write about enumerated data types with suitable examples.	6 Marks
	b)	Write a 'C' program for dynamic linked list representation.	6 Marks

UNIT-V

9	a)	Explain various file opening modes in 'C' with suitable examples.	6 Marks
	b)	Write a 'C' program to copy a text file of integers.	6 Marks
		(OR)	
10	a)	Explain various text file modes in 'C' language.	6 Marks
	b)	Write a 'C' program for random access of a file.	6 Marks

CODE No.:14MC10103 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. I Semester (SVEC14) Supplementary Examinations June - 2016

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		Transform the Infix expression (A + (B * C - (D / E ^ F) * G) * H) into postfix expression using a stack and illustrate.	12 Marks
		(OR)	
2		Explain ADT and its implementations.	12 Marks

UNIT-II

3		Write a program to implement Queue operations using single linked list.	12 Marks
		(OR)	
4	a)	Write an algorithm to reverse singly linked circular list in place.	6 Marks
	b)	Develop pseudo code for a function that adds two polynomials of degree two in one variable represented as singly linked lists. illustrate its working.	6 Marks

UNIT-III

5		Write and explain Quick sort algorithm. Sort the keys H, L, P, T, W, G, E, C, A in ascending order by applying quick sort.	12 Marks
		(OR)	
6	a)	Define max (binary) heap. What is the height of an n-element max heap?	4 Marks
	b)	Sort the keys 5, 13, 2, 25, 7, 17, 20, 8, 4 in ascending order by applying heap sort.	8 Marks

UNIT-IV

7	a)	Write recursive and iterative procedure for preorder traversal of binary tree.	6 Marks
	b)	Write a routine to find maximum element of a binary search tree.	6 Marks
		(OR)	
8	a)	Create a binary search tree using the following data entered as a sequential set: 14, 23, 7, 10, 33, 56, 80, 66, 70	6 Marks
	b)	Define binary trees and write the applications of binary trees.	6 Marks

UNIT-V

9		Explain AVL tree concepts and its algorithms.	12 Marks
		(OR)	
10		Compare *prims* and *kruskals* algorithm with suitable example.	12 Marks

CODE No.:10MC2BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC10) Supplementary Examinations January - 2016

PROBABILITY AND STATISTICS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) State and prove the addition theorem of probability.
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 ?

2. a) Define probability distribution function and write the properties of distribution function.
b) A function *f(x)* is defined as follows:

$$f(x) = \begin{cases} 0, & x < 2 \\ \frac{1}{18}(2x+3), & 2 \le x \le 4 \\ 0, & x > 4 \end{cases}$$

Show that it is a probability density function. Find the probability that a variate having this density will fall in the interval $2 \le x \le 3$.

3. a) Derive the Mean and Variance of Poisson distribution.
b) State the properties of Normal distribution. Also give its importance.

4. a) Define Point Estimation and Interval Estimation.
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 this population. Find
(i) The mean of the population.
(ii) The standard deviation of the population.
(iii) The mean of the sampling distribution of means.
(iv) The standard deviation of the sampling distribution of means.

5. a) In a sample of 1000 people in Andhra Pradesh 650 are Rice eaters and the rest are Wheat eaters. Can it be concluded that both Rice and Wheat are equally popular in Andhra Pradesh at 1% level of significance?
b) Test for the significance of the difference between the means of the sample from the following data:

	Sample size	Mean	Standard Deviation
Sample I:	100	60	4
Sample II:	200	65	5

6. 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.
b) A die is thrown 264 times with the following results. Show that the die is biased.

No. of appeared on the die	1	2	3	4	5	6
Frequency	40	32	28	58	54	60

7. a) Consider the following data on the number of hours which 10 persons studied for a test and

their scores on the test:

Hours studied (x)	4	9	10	14	4	7	12	22	1	17
Test score (y)	31	58	65	73	37	44	60	91	21	84

(i) Find the least squares line that approximates the regression of the test scores on the number hours studied.
(ii) Predict the average test score of a person who studied 14 hours for the test.

b) Obtain the rank correlation coefficient for the following data:

X	68	64	75	50	64	80	75	40	55	64
Y	62	58	68	45	81	60	68	48	50	70

8. a) Explain $\bar{x}$ and R charts.

b) Describe the method of construction of control chart for defectives.

CODE No.:10MC2BS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. II Semester (SVEC10) Supplementary Examinations June - 2016

PROBABILITY AND STATISTICS

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) State and prove Baye's Theorem.
b) In a certain college, 40% of men and 10% of women are taller than 1.8 metres. Further more in the college 60% of students are women. If a student is selected at random and is taller than 1.8 metres find the probability that the selected student is a woman.

2. a) Explain the concept of Mathematical Expectation of a random variable. State addition and multiplication theorems on mathematical expectation.
b) A continuous random variable X has a probability density function

$f(x) = 3x^2, 0 \le x \le 1$
$= 0,$ otherwise.

Find K such that $P(X \le K) = P(X > K)$.

3. a) In a large consignment of electric bulbs 10% are defective. A random sample of 20 is taken for inspection. Find the probability that
(i) All are good bulbs.
(ii) Almost there are three defective bulbs.
(iii) Exactly there are three defective bulbs.
b) If X is normally distributed with mean 6 and standard deviation 2 find
i) $P(0<X<12)$ ii) $P(X<10)$ iii) $P(X \ge 10)$.

4. a) What is standard error of a statistic? Give its importance.
b) A population consists of five numbers 2, 4, 6, 8, and 12. Enumerate all possible samples of size 2 that can be drawn from the population without replacement. Find the mean of the sampling distribution of sample mean.

5. a) In a sample of 1000 people in Andhra Pradesh 650 are Rice eaters and the rest are Wheat eaters. Can it be concluded that both Rice and Wheat are equally popular in Andhra Pradesh at 1% level of significance?
b) Test for the significance of the difference between the means of the sample from the following data:

	Sample size	Mean	Standard Deviation
Sample I:	100	60	4
Sample II:	200	65	5

6. a) What are the applications of χ^2 and F tests?
b) A certain stimulus administered to each of the 12 patients resulted in the following increase of blood pressure: 4, 3, 7, -3, 0, 5, -2, 1, 6, 4, 2, and 5. Can it be concluded that the stimulus will, in general be accompanied by an increase in blood pressure? (Table value is 1.80 at 5% l.o.s).

7. a) Consider the following data on the number of hours which 10 persons studied for a test and their scores on the test:

Hours studied (x)	4	9	10	14	4	7	12	22	1	17
Test score (y)	31	58	65	73	37	44	60	91	21	84

(i) Find the least squares line that approximates the regression of the test scores on the number hours studied.

(ii) Predict the average test score of a person who studied 14 hours for the test.

b) Obtain the rank correlation coefficient for the following data:

X	68	64	75	50	64	80	75	40	55	64
Y	62	58	68	45	81	60	68	48	50	70

8. a) Explain the clearly the construction and function of (i) X - chart and (ii) C - chart.

b) Draw the mean and range charts from the following data and state your conclusion.

Sample No.	1	2	3	4	5	6	7	8	9	10	Total
Sample Mean	12.8	13.1	13.5	12.9	13.2	14.1	12.1	15.5	13.9	14.2	135.3
Sample Range	2.1	3.1	3.9	2.1	1.9	3.0	2.5	2.8	2.5	2.0	25.9

(Given n = 5, $A_2 = 0.577$, $D_2 = 0$, $D_4 = 2.115$)

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. II Semester (SVEC14) Regular/Supplementary Examinations June - 2016

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 Bayes theorem. 6 Marks

b) An MCA applies for a job in two firms X and Y. The probability of his being selected in firm X is 0.7 and being rejected at Y is 0.5. The probability of at least one of his applications being rejected is 0.6. What is probability that he will be selected in one of the firms? 6 Marks

(OR)

2 A random variable 'X' has the following probability function: 12 Marks

X:	1	2	3	4	5	6	7
P(X):	k	2k	2k	3k	k^2	$2k^2$	$7k^2+k$

i) Find k.

ii) Evaluate $p(X < 6)$, $p(X \geq 6)$, and $p(0 < X < 5)$.

iii) If $p(x \leq a) > 1/2$, find the minimum value of a.

UNIT-II

3 a) State the characteristics and importance of normal distribution. 5 Marks

b) Let X be a normal variate with mean 30 and standard deviation 5. Find the probability that (i) $26 \leq X \leq 40$ (ii) $X \geq 45$ using normal probability table. 7 Marks

(OR)

4 a) Explain control chart for fraction defectives. 5 Marks

b) The following data shows the inspection results of 10 samples of electric tube lights selected at random from a process. Construct P-chart to indicate whether the process is under control or not. 7 Marks

Sample no.	1	2	3	4	5	6	7	8	9	10
Sample size	100	100	100	100	100	100	100	100	100	100
No.of defects	4	5	7	12	4	2	1	6	4	5

UNIT-III

5 Relation between height and weight of a batch of students is give in the following table: 12 Marks

Height	100	105	105	104	111	115	125	130	132	137
Weight	48	49	50	51	52	53	54	55	56	57

Calculate Coefficient of Correlation.

(OR)

6 Find the regression coefficient of X on Y and Y on X for the following data: 12 Marks

X	3	2	-1	6	4	-2	5
Y	5	13	12	-1	2	20	0

UNIT-IV

7 Define sampling distribution. A population consists of only five individual 12 Marks

values 2, 3, 4, 5 and 6. Consider all possible samples of size 2 that can be drawn without replacement from this population. Show that arithmetic mean of the sampling distribution of mean is equal to population mean.

(OR)

8 a) Define: 6 Marks
i) Null and Alternative hypothesis
ii) Type-I and Type-II errors.

b) Twenty 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 favour of the hypothesis that it is more at 5 % level (use large sample test)? 6 Marks

UNIT-V

9 Define the Statistics t and F. Write down their sampling distribution. State the important assumptions in respect of them. 12 Marks

(OR)

10 Memory capacity of 10 students was tested before and after training. State whether training was effective or not from the following scores. 12 Marks

Before training	12	14	11	8	7	10	3	0	5	6
After training	15	16	10	7	5	12	10	2	3	8

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. II Semester (SVEC14) Regular/Supplementary Examinations June - 2016

PROFESIONAL ETHICS

[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)	Discuss the variety of moral issues.	6 Marks
	b)	What are various types of enquires? Explain with suitable examples.	6 Marks
		(OR)	
2	a)	Discuss on consensus and controversy.	6 Marks
	b)	Explain how Gilligan's theory is different from Kohlberg's theory.	6 Marks

UNIT-II

3	a)	What are the various limitations of codes and their implications on engineering profession?	6 Marks
	b)	What is said to be a regulated society? Explain with a suitable example.	6 Marks
		(OR)	
4	a)	"An engineer requires moral justification and satisfaction". Discuss.	6 Marks
	b)	Explain, what do you mean by an intellectual virtue.	6 Marks

UNIT-III

5	a)	Explain in detail about the role of codes in guiding obligations of engineers. Mention its limitations.	6 Marks
	b)	Briefly discuss about Industrial standards and its effects on engineering products and practice.	6 Marks
		(OR)	
6	a)	What is the importance of codes of ethics? Give a brief account on '4' canons of codes of ethics quoted by international standard or Association.	6 Marks
	b)	Give justifications on how the challenger disaster could have been avoided by engineers.	6 Marks

UNIT-IV

7	a)	What are professional rights? Do you think that it is essential in today's work life?	6 Marks
	b)	Briefly write some rights of engineers.	6 Marks
		(OR)	
8	a)	What do you mean by occupational crime? Quote some examples from engineering.	6 Marks
	b)	Write the ethical role of engineers in society.	6 Marks

UNIT-V

9	a)	What is meant by "relative values" for an MNC company like IBM / Accenture?	6 Marks
	b)	What is meant by policy vacuum in computer ethics?	6 Marks
		(OR)	
10	a)	What is basic ethical and moral responsibility of a manager-engineer?	6 Marks
	b)	Who are referred to as moral leaders? Give some examples of the same.	6 Marks

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CODE No.:14MC20101 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. II Semester (SVEC14) Regular/Supplementary Examinations June - 2016

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	a)	Briefly explain about single processor system.	4 Marks
	b)	Write about multi processor system.	4 Marks
	c)	Briefly explain about clustered system.	4 Marks
		(OR)	
2		Explain about types of system calls.	12 Marks

UNIT-II

3	a)	Discuss about process control block.	6 Marks
	b)	Explain about process state.	6 Marks
		(OR)	
4	a)	Write about the fork () and exec () system calls.	6 Marks
	b)	Discuss about signal handling.	6 Marks

UNIT-III

5		What are Semaphores, Critical Regions and Monitors? Explain the purpose, advantages and limitations of each.	12 Marks
		(OR)	
6	a)	What are the necessary conditions for a Deadlock situation? Explain.	4 Marks
	b)	What is Resource Allocation Graph? What are the components of it? Draw a sample Resource Allocation Graph and explain the situation of it.	8 Marks

UNIT-IV

7	a)	Explain memory management with paging.	6 Marks
	b)	Discuss any two techniques for structuring of Page Table.	6 Marks
		(OR)	
8	a)	Discuss various frame allocation methods.	6 Marks
	b)	When do page faults occur? Describe the actions taken by the operating system when a page fault occurs.	6 Marks

UNIT-V

9	a)	Discuss the strengths and weaknesses of implementing an access matrix using access lists that are associated with objects.	7 Marks
	b)	A password may become known to other users in a variety of ways. Is there a simple method for detecting that such an event has occurred? Explain your answer.	5 Marks
		(OR)	
10	a)	What is fault tolerance?	2 Marks
	b)	Discuss various fault tolerance techniques.	10 Marks

CODE No.:14MC20102 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. II Semester (SVEC14) Regular/Supplementary Examinations June - 2016

OBJECT ORIENTED 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 the role of JVM.	4 Marks
	b)	Device a Java program to checks whether two matrices can be multiplied or not. If yes, multiply them.	8 Marks
		(OR)	
2	a)	Differentiate between Object Oriented Programming and Procedure Oriented Programming.	6 Marks
	b)	Explain Java's automatic type promotion with suitable example.	6 Marks

UNIT-II

3	a)	What is constructor and explain overloading methods for constructors with suitable examples?	6 Marks
	b)	What is the difference between string Buffer and string Builder?	6 Marks
		(OR)	
4		What is garbage collection? What is the process that is responsible for doing that in Java?	12 Marks

UNIT-III

5		Give brief description on different types of inheritance with suitable examples.	12 Marks
		(OR)	
6	a)	Explain the Package in details.	6 Marks
	b)	Discuss on Super keyword with suitable example program.	6 Marks

UNIT-IV

7		Explain how reading console input and writing console output is facilitated in Java. Write a Java program for copying bytes from one file to another.	12 Marks
		(OR)	
8	a)	Explain nested try statements with an appropriate example.	5 Marks
	b)	Explain throw, throws and finally with suitable example.	7 Marks

UNIT-V

9		Write a Java program using Swing package to display a scrollable list of items and selected item should be displayed in a confirmation dialog box.	12 Marks
		(OR)	
10		List any three AWT events. When those events are raised? Give the corresponding listener interfaces and also provide outline event handler functions.	12 Marks

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M.C.A. II Semester (SVEC14) Regular/Supplementary Examinations June - 2016

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		Differentiate between logical, conceptual and physical view of data with an example.	12 Marks
		(OR)	
2		Specify various levels in the architecture for database systems with a neat pictorial representation and discuss the concept of data independence.	12 Marks

UNIT-II

3	a)	Explain, how the translating relationship sets with key constraints.	6 Marks
	b)	Enforce integrity constraints and specify the ways to handle foreign key violations.	6 Marks
		(OR)	
4	a)	Answer each of the following questions briefly. The questions are based on the following relational schema: **Emp**(eid: integer, ename: string, age: integer, salary: real) **Works**(eid: integer, did: integer, pct_time: integer) **Dept**(did: integer, dname: string, budget: real, managerid: integer) **i)** Give an example of a foreign key constraint that involves the Dept relation. What are the options for enforcing this constraint when a user attempts to delete a Dept tuple? **ii)** Write the SQL statements required to create the above relations, including appropriate versions of all primary and foreign key integrity constraints.	7 Marks
	b)	List out various steps to be followed in the database design process.	5 Marks

UNIT-III

5		Give an example of a relation which is in 3NF but not in BCNF. How will you convert that relation to BCNF?	12 Marks
		(OR)	
6	a)	List and explain complex integrity constraints in SQL.	6 Marks
	b)	Illustrate various anomalies caused by redundancy.	6 Marks

UNIT-IV

7		List the ACID properties. Explain the usefulness of each.	12 Marks
		(OR)	
8		Explain the following with examples. i) Conflict Serializability ii) Locking protocol	12 Marks

UNIT-V

9		Explain in detail Redundant Array of Independent Disks.	12 Marks
		(OR)	
10		Explain in detail the structure of B+ trees and how are B+ trees searched.	12 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. II Semester (SVEC14) Regular/Supplementary Examinations June - 2016

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

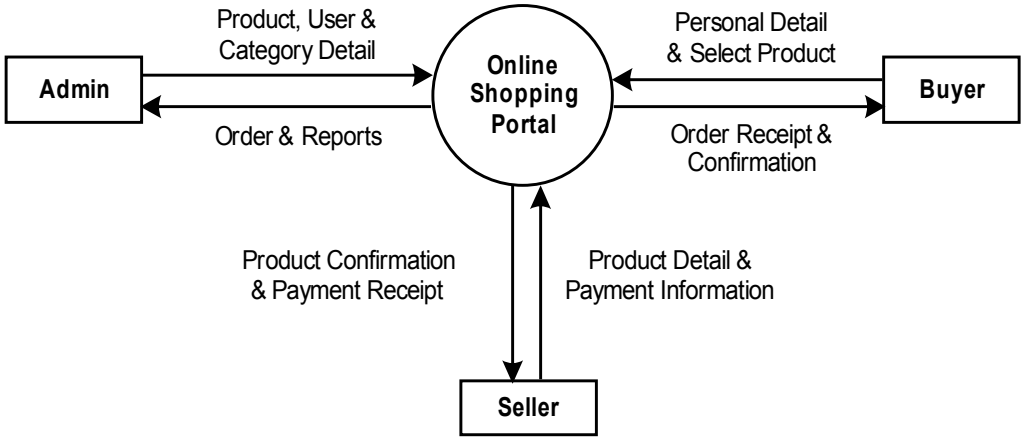
1	a)	Give the IEEE definition of Software Engineering.	3 Marks
	b)	Give the different approaches available to assess and improve the software process.	9 Marks
		(OR)	
2	a)	Explain level 4 and level 5 of CMMI.	3 Marks
	b)	Explain software reengineering process model with a neat diagram.	9 Marks

UNIT-II

3	a)	Explain the waterfall model. What are the problems that are sometimes encountered when the waterfall model is applied?	6 Marks
	b)	What are functional and non functional requirements?	6 Marks
		(OR)	
4		Explain about Requirement Engineering task in detail.	12 Marks

UNIT-III

5 Consider the context-level DFD for an online shopping system given below. Transform it into software architecture. 12 Marks



(OR)

6	a)	What is cohesion and coupling?	3 Marks
	b)	Design a class diagram for an online shopping system. The system description is given below: Admin manages the customer account and product details. Users can view the products available, but to purchase a product, the user has to login. Only registered users can login and new users can register. Users can add the products to a cart and finally buy the products using a payment gateway.	9 Marks

UNIT-IV

7	a)	Explain the golden rules for User Interface Design.	6 Marks
	b)	Discuss about Design steps in detail.	6 Marks
		(OR)	
8		Explain various strategic approaches to software testing in detail.	12 Marks

UNIT-V

9	a)	Discuss about Decomposition Techniques.	8 Marks
	b)	What is the need for Software Project Estimation?	4 Marks
		(OR)	
10	a)	Explain FP based Estimation with example.	6 Marks
	b)	Briefly write on COCOMO II Model.	6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. II Semester (SVEC14) Supplementary Examinations January - 2016

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 Baye's 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 A was used to draw the balls is 6/7, find the value of n. 6 Marks

(OR)

2 Let X be continuous random variable with pdf 12 Marks

$$f(x) = \begin{cases} ax & , 0 \le x \le 1 \\ a & , 1 \le x \le 2 \\ -ax+3a & , 2 \le x \le 3 \\ 0 & , \text{elsewhere} \end{cases}$$

(i) Find the constant a (ii) Compute $P(X \le 1.5)$.

UNIT-II

3 a) State and prove the reproductive property of the Poisson distribution. 6 Marks

b) The number of road construction projects that take place at any one time in a certain city follows a Poisson distribution with a mean of 3. Find the probability that exactly five road construction projects are currently taking place in this city. 6 Marks

(OR)

4 a) Explain statistical basis and construction of p and np charts. 6 Marks

b) Daily samples of 100 power drills are removed from Drill Master's assembly line and inspected for defects. Over the past 21 days, the following information has been gathered. Develop a 3 standard deviation (99.7% confidence) p-chart. Is the process in control? 6 Marks

Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Number of defects	6	5	6	4	3	4	5	3	6	3	7	5	4	3	4	5	6	5	4	3	7

UNIT-III

5 Ten competitors in a beauty contest are ranked by three judges as follows: 12 Marks

Judges	Competitors									
	1	2	3	4	5	6	7	8	9	10
A	6	5	3	10	2	4	9	7	8	1
B	5	8	4	7	10	2	1	6	9	3
C	4	9	8	1	2	3	10	5	7	6

Using Spearman's rank correlation coefficient, discuss which pair of judges has the nearest approach to common tastes of beauty.

(OR)

6 Compute the two regression coefficients and hence correlation coefficient from the following data. 12 Marks

X	1	2	3	4	5	6	7	8	9

Y	9	8	10	12	11	13	14	16	15

UNIT-IV

7 Define standard error, point and interval estimation. A sample of 100 families selected at random from a city gives an average annual income of Rs. 8000 with a standard deviation of Rs.3000. Estimate the confidence interval of mean income of families in the city at 95% and 99% confidence level. 12 Marks

(OR)

8 a) Discuses one tailed and two tailed tests with corresponding critical values. 6 Marks

b) Random samples of 400 men and 600 women were asked whether they would like to have a flyover near their residence. 200 men and 325 women were in favour of the proposal. Test the hypothesis that proportions of men and women were in favour of the proposal are same against that they are not at 5% level. 6 Marks

UNIT-V

9 Explain second method of chi-square distribution. Explain merits and demerits also its applications. 12 Marks

(OR)

10 The following figures show the distribution of digits in number chosen at random from a telephone directory: 12 Marks

digit	0	1	2	3	4	5	6	7	8	9	Total
frequency	1026	1107	997	966	1075	933	1107	972	964	853	10,000

Test whether the digits may be taken to occur equally frequently in the distribution.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. II Semester (SVEC14) Supplementary Examinations January - 2016

OBJECT ORIENTED 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 the three Object Oriented Principles that are used to implement the object-oriented model.	6 Marks
	b)	"Java is a platform-independent and secure language", Justify. Also describe each word in the statement **"public static void main (String[ ] args)".**	6 Marks
		(OR)	
2	a)	Use the Java constructs to generate Fibonacci numbers in the given range.	7 Marks
	b)	Explain the Type Conversion and Casting with suitable example.	5 Marks

UNIT-II

3	a)	Explain about the use of static keyword in all different contexts.	6 Marks
	b)	Define a Java class for representing distance in terms of meters and centimeters. Provide necessary constructors and methods for addition and subtraction of distances.	6 Marks
		(OR)	
4	a)	Give various data conversion methods available in String class and show their usage with example statements.	6 Marks
	b)	What is the use of Object class? Explain about the usage of 'this' keyword.	6 Marks

UNIT-III

5	a)	What is the difference between an abstract class and a class in Java?	4 Marks
	b)	Use appropriate Object Oriented concept supported by Java to create a class named ***Shape***. Using this class create three sub classes ***Circle, Triangle*** and ***Square*** each class has two member function named draw ( ) and erase ( ).	8 Marks
		(OR)	
6	a)	What are packages in Java? List the various levels of access protection for packages.	8 Marks
	b)	Discuss with an example, how to create and access a package.	4 Marks

UNIT-IV

7		Explain the concept of creating multiple threads using Thread class and Runnable Interface.	12 Marks
		(OR)	
8		Describe exception handling mechanism. Demonstrate Nested try statements.	12 Marks

UNIT-V

9		Explain the implementation of the **MenuBar**, **Menu** and **MenuItem** classes in the AWT with suitable example.	12 Marks
		(OR)	
10		Explain the Swing GUI key items: ***components*** and ***containers***. Also explain how Trees are implemented in Swing by the **JTree** class.	12 Marks

CODE No.:14MC20103 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. II Semester (SVEC14) Supplementary Examinations January - 2016

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)	What are the advantages of DBMS over traditional file-processing system?	6 Marks
	b)	Write about different DBMS component modules in a database system environment.	6 Marks
		(OR)	
2	a)	What are the characteristics of Database approach?	6 Marks
	b)	Write about data models, schemas and instances.	6 Marks

UNIT-II

3	a)	Explain how an ER model is mapped to a relational Database.	8 Marks
	b)	What is meant by specialization and generalization?	4 Marks
		(OR)	
4	a)	Explain how are integrity constraints imposed on relations with suitable examples.	8 Marks
	b)	Explain EER model with a suitable example.	4 Marks

UNIT-III

5	a)	Explain various problems caused by data redundancy.	6 Marks
	b)	Write about equi-join, inner-join and outer-join.	6 Marks
		(OR)	
6	a)	What is decomposition of a relation? Explain the problems related to decomposition.	6 Marks
	b)	What is normalization? Explain FIRST normal form and SECOND normal form with a suitable example.	6 Marks

UNIT-IV

7	a)	What are the ACID properties of a transaction?	4 Marks
	b)	Explain, how can a system crash be recovered using ARIES algorithm.	8 Marks
		(OR)	
8		Explain 2 Phase Locking protocol in detail.	12 Marks

UNIT-V

9		Explain in detail Redundant Array of Independent Disks.	12 Marks
		(OR)	
10		Explain in detail Indexed Sequential Access Methods.	12 Marks

CODE No.:10MC30103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC10) Supplementary Examinations January - 2016

DATA WAREHOUSING AND DATA MINING

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) What is the need for Data Warehousing?
b) Discuss the three tier architecture of a Data Warehouse.

2. a) With an example, explain Snowflake schema.
b) List the functionalities of transformation tools.

3. a) List the guidelines for Online Analytical Processing.
b) Briefly explain the data mining primitives.

4. "Is data cube technology sufficient to accomplish all kinds of concept description tasks for large data sets?", if yes explain with an example, otherwise what the other alternatives are?

5. Discuss about Constraint based association mining. Illustrate with an example.

6. What is classification? How is classification performed using decision tree induction? Explain with an example.

7. a) How to compute the dissimilarity between the objects described by categorical, ordinal and ratio-scaled variables?
b) Describe Chameleon algorithm used for clustering.

8. a) Explain latent semantic indexing.
b) Write a note on HITS algorithm.

CODE No.:10MC30103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC10) Supplementary Examinations July - 2016

DATA WAREHOUSING AND DATA MINING

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. With a neat diagram, explain the Architecture of Data Warehouse.

2. Explain in detail about the snow flake schema. How does snow flake schema different from a star schema? Name any two advantages and disadvantages of snow flake schema.

3. a) List the guidelines for Online Analytical Processing.
b) Briefly explain the Data Mining primitives.

4. A database has six transactions. Let min-sup = 50% and min-conf = 75%.

TID	List of items
001	milk, dal, sugar, bread
002	Dal, sugar, wheat,jam
003	Milk, bread, curd, paneer
004	Wheat, paneer, dal, sugar
005	Milk, paneer, bread
006	Wheat, dal, paneer, bread

i) Find all frequent item sets using FP-growth algorithm.
ii) List all the strong association rules.

5. Explain “FP-Growth” algorithm with an example.

6. Explain in detail about the how a “naive Bayesian” classifier works.

7. a) How to compute the dissimilarity between the objects described by categorical, ordinal and ratio-scaled variables?
b) Describe Chameleon algorithm used for clustering.

8. a) What are the different measures used for text retrieval?
b) Discuss about any two document dimensionality reduction methods.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC14) Regular Examinations January - 2016

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 Find the maximum value of $Z = 5x_1 + 7x_2$ 12 Marks

Subject to the constraints

$$x_1 + x_2 \leq 4$$
$$3x_1 + 8x_2 \leq 24$$
$$10x_1 + 7x_2 \leq 35$$
$$x_1, x_2, \geq 0$$

Use graphical method.

(OR)

2 Solve the following LPP 12 Marks

Maximize $Z = 5x_1 - 2x_2 + 3x_3$

Subject to $2x_1 + 2x_2 - x_3 \geq 2$

$3x_1 - 4x_2 \leq 3$

$x_2 + 3x_3 \leq 5$

$x_1, x_2, x_3 \geq 0$

UNIT-II

3 Solve the following transportation problem starting with the initial solution obtained by VAM. 12 Marks

	D_1	D_2	D_3	D_4	Supply
O_1	2	2	2	1	3
O_2	10	8	5	4	7
O_3	7	6	6	8	5
Demand	4	3	4	4	15

(OR)

4 Solve the following travelling salesman problem 12 Marks

From \ To	A	B	C	D	E
A	-	7	6	8	4
B	7	-	8	5	6
C	6	8	-	9	7
D	8	5	9	-	8
E	4	6	7	8	-

UNIT-III

5 The cost of a machine is Rs.6100 and its scrap value is only Rs.100. The maintenance costs are found from experience to be: 12 Marks

year	1	2	3	4	5	6	7	8
Maintenance cost in Rs.	100	250	400	600	900	1250	1600	2000

When should machine be replaced?

(OR)

6 Find the sequence for the following eight jobs as shown in table below that will minimize the total elapsed time for the completion of all the jobs. Each job is processed in the order of C-A-B. Calculate the idle time. 12 Marks

	Job								
Machine		1	2	3	4	5	6	7	8
	A	4	6	3	4	5	3	6	2
	B	8	10	7	8	11	8	9	13
	C	5	6	2	3	4	9	15	11

UNIT-IV

7 a) Explain the following terms: 6 Marks
(i) Two-person zero sum game (ii) Pure strategy (iii) Mixed strategy

b) Solve the following game. 6 Marks

	Player B				
		I	II	III	IV
Player A	I	-5	3	1	20
	II	5	5	4	6
	III	-4	2	0	5

(OR)

8 Solve the following game graphically. 12 Marks

2	2	3	-2
4	3	2	6

UNIT-V

9 a) What are the different costs associated with the inventory control and explain them briefly? 6 Marks

b) A particular item has demand of 9000 units per year. The cost of procurement is Rs.100 and the holding cost per unit is Rs.2.40/year. The replacement is instantaneous and no shortages are allowed. Determine: (i) the economic order quantity (ii) the time between orders (iii) the number of orders per year. 6 Marks

(OR)

10 A project consists of 9 jobs (A, B, C …I) with the following precedence relations and time estimates. 12 Marks

Job	A	B	C	D	E	F	G	H	I
Predecessor	-	-	A,B	A,B	B	D,E	C,F	D,E	G,H
Time(Days)	15	10	10	10	5	5	18	9	15

(i) Draw the project network.
(ii) Identify the critical path.

CODE No.:14MC3HS01 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC14) Regular Examinations January - 2016

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		Explain the concept of organizational behavior. Why there are individual differences and what can Organizational Behavior manager do about them?	12 Marks
		(OR)	
2		What are the contributions of other social sciences to Organizational Behavior? Explain.	12 Marks

UNIT-II

3		Define personality. Explain the theories of personality.	12 Marks
		(OR)	
4		What are the components of learning? Explain social learning theory and its relevance.	12 Marks

UNIT-III

5		Define Human Resource Management. Explain the objectives of Human Resource Management in organizations.	12 Marks
		(OR)	
6	a)	Explain the importance of Human Resource Planning. What are the methods for determining the demand for and supply of human resources?	6 Marks
	b)	What are job description, job specification and person specification?	6 Marks

UNIT-IV

7		Distinguish between recruitment and selection. What are the different sources of recruitment?	12 Marks
		(OR)	
8		What are the impediments for effective training?	12 Marks

UNIT-V

9	a)	What are the factors which influence employee remuneration?	6 Marks
	b)	Explain the importance of employee participation in decision making. What are the levels of employee participation?	6 Marks
		(OR)	
10		Explain the contemporary issues of human resources.	12 Marks

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CODE No.:14MC30101 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC14) Regular Examinations January - 2016

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) List the various steps involved in object oriented analysis. 6 Marks

b) "Relationship in UML diagrams often have multiplicities associated with them. Give of multiplicity and find the meaning of the following multiplicities. 6 Marks
i) 0..* ii) 1..* iii) 0..n"

(OR)

2 a) Mention at least five benefits of object oriented system development methodology 6 Marks

b) Show a class hierarchy to organize the soft drinks manufacturing process system: drinks, alcoholic, non-alcoholic, apple juice, grape juice, mango juice, lemon juice, mineral water, soda, beer and wine. 6 Marks

UNIT-II

3 Develop a class diagram for the following scenario: 12 Marks

Consider a scenario, when Martha stockton greengage died at the age of 87, she left her entire $2 billion fortune to charity. Specifically, her will set up the Martha Stockton Greengage (MSG) foundation to assist young couples in purchasing their own homes by providing low-cost loans.

In order to reduce operating expense, the trustees of the MSG foundation are investigating computerization. Because none of the trustees has any experience with counters, they decide to commission a small information system that will perform the calculations needed to determine how much money is available each week to purchase.

The first step, as always, is to understand the application domain, home mortgages in this instance have you ever wondered why the word mortgage is pronounced " more gidge" with the accent on the first syllable? The word, which was first used in middle English in the fourteenth century, come from the old French word mort meaning "dead" and the Germanic word gage meaning " a pledge", that is , a promise to forfeit property if the debt is not paid. Strangely enough, a mortgage is a “dead pledge" in two different sense. If the loan is not repaid, the property is forfeited, or "dead" to the borrower. Forever, and if the loan is repaid, then the promise to repay is dead. This two-way explanation was first given by the English judge Sir Edward Coke (1552-1634) And the strange pronunciation? The final letter in a French word like mort is silent hence the "more" and the suffice "-age" is frequently pronounced "idge" in English. Examples inde the words carriage, marriage disparage and encourage.

(OR)

4 a) List and explain various types of relationships that can exist among classes in a class diagram. Also give their notations. 6 Marks

b) Explain, how reverse engineering can perform on code with an example. 6 Marks

UNIT-III

5 Develop a usecase diagram for the following scenario: 12 Marks

A Ticket Vending Machine (TVM) dispenses tickets to passengers at a railway station. Passengers use the front panel to specify their boarding and destination place, details of passenger (number of adults and children) and data of travel. The machine displays the fare for the requested ticket. The passenger then deposits cash in the bin provided and press “accept cash". The machine check the cash, if it is more than the balance cash is paid out. And the ticket requested is printed. The system is also used by the operator who might want to know the cash held in the machine, the break-ups of small changes available in the machine, withdraw or deposit cash when needed. And the report option also included the detailed report of transaction, summary report of the number of tickets sold for each destination, opening balance, cash collected, cash dispensed and current balance in the machine.

(OR)

6 a) Design the usecase diagram for online hospital management system 6 Marks

b) Design the sequence diagram for library management system 6 Marks

UNIT-IV

7 Draw the State chart diagram for the following scenario: 12 Marks

“Software is to be designed for supporting a computerized ATM banking network. All the processes involved in a bank are computerized these days. All the accounts maintained in the bank and also the transactions effected, including ATM transactions are to be processed by the computers in the bank. An ATM accepts a relevant cash card, interacts with the user, communicates with the central system to carry out the transaction, dispenses cash and print receipts. The system to be designed and implemented must include appropriate record keeping and security provisions. The system must handle concurrent accesses to the same account."

(OR)

8 a) Explain, how state chart diagrams are useful while dealing with complex objects. 6 Marks

b) Explain the use of activity diagrams in object oriented product development with an example. 6 Marks

UNIT-V

9 a) Draw the component diagram for online shopping system in which customer can able to place order and make a payment of a product.
(Note: Use appropriate notations). 6 Marks

b) Discuss in detail the modeling embedded systems. 6 Marks

(OR)

10 Design and develop UML diagrams for Railway Reservation System. 12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC14) Regular Examinations January - 2016

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) Mention the characteristics of Data Warehouse. 4 Marks
b) Construct and explain 3-tier Data Warehouse Architecture. 8 Marks

(OR)

2 a) What is Data Mart? Discuss various types of Data Marts with example. 6 Marks
b) Compare and contrast operational and informational data stores. 6 Marks

UNIT-II

3 Describe any two multidimensional schemas with suitable examples. 12 Marks

(OR)

4 a) List out major issues in Data Mining and explain in detail. 6 Marks
b) Explain, how classification of Data Mining can be done. 6 Marks

UNIT-III

5. Elaborate on methods used in performing data reduction to preprocess the data. 12 Marks

(OR)

6. A database has six transactions. Let min-sup = 40% and min-conf = 80% 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 Define classification? How classification is performed using decision tree induction? Explain with an example. 12 Marks

(OR)

8 Apply K-Means and K-Medoid partitioning methods to cluster the data and discuss its merits and demerits. 12 Marks

UNIT-V

9 Identify various Data Mining applications which useful for analyzing the data for benefit of society. 12 Marks

(OR)

10 Describe briefly Multimedia mining. 12 Marks

CODE No.:14MC30103 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC14) Regular Examinations January - 2016

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		Explain different topologies in computer networks with advantages and disadvantages of each topology.	12 Marks
		(OR)	
2		Describe guided and unguided transmission media in detail.	12 Marks

UNIT-II

3	a)	List out the functionalities of Data link layer.	3 Marks
	b)	Illustrate CRC with example.	6 Marks
	c)	Discuss about pure ALOHA and slotted ALOHA.	3 Marks
		(OR)	
4	a)	Explain collision free protocols. i) Bit map protocol. ii) Binary countdown protocol. iii) Limited contention protocol.	9 Marks
	b)	Solve the following by using even and odd parity. i) 1100101. ii) 1001001. iii) 0100111.	3 Marks

UNIT-III

5	a)	Explain shortest path routing protocol with example.	7 Marks
	b)	Explain flooding with example.	5 Marks
		(OR)	
6	a)	Discuss network layer design issues.	5 Marks
	b)	Explain distance vector routing with example.	7 Marks

UNIT-IV

7	a)	Describe jitter control.	2 Marks
	b)	Explain remote procedure call.	6 Marks
	c)	Discuss crash recovery in transport layer.	4 Marks
		(OR)	
8		Explain working process of TCP protocol and explain each field in TCP header with neat diagram.	12 Marks

UNIT-V

9	a)	Describe the architecture and services of Electronic Mail.	6 Marks
	b)	What is MIME? Explain it.	6 Marks
		(OR)	
10		Write a detailed note on Fundamental Cryptographic Principles.	12 Marks

CODE No.:14MC30101 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC14) Supplementary Examinations July - 2016

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)	Write and explain about Common Modeling Techniques.	6 Marks
	b)	What is UML diagram? Write the Common Mechanisms for the same.	6 Marks
		(OR)	
2		Write and explain about features of the following properties with examples. i) Inheritance. ii) Association. iii) Encapsulation and Polymorphism. iv) Aggregation.	12 Marks

UNIT-II

3	a)	Write about modeling the seams in a system.	6 Marks
	b)	Discuss briefly about Interfaces and Packages.	6 Marks
		(OR)	
4	a)	Define the terms Instances and Objects and explain the same.	6 Marks
	b)	Write about logical database schema.	6 Marks

UNIT-III

5	a)	Explain about use case diagrams. Write the use case diagram for banking systems.	6 Marks
	b)	Discuss about developing a model for a construction of a system using use case diagrams.	6 Marks
		(OR)	
6		Write and discuss about Collaboration diagrams with examples and also explain the concepts of Reverse Engineering related to it.	12 Marks

UNIT-IV

7		Draw the activity diagram for the following scenario: Students are willing to take a MockTest before going to take an actual exam. For satisfying their needs assume that you will be developing the software with following document. " In the online mock test, student is attending the test where as administrator is conducting the exam. Here the administrator can be a software module. For attending the mock test the student have to register to attend the test while providing all necessary information. After the registration student will receive the loginID and password. Using the loginID, password, student is attending the exam, backtrack or review questions and finally they get the results. They have to complete the exam within the time frame. Administrator is the only person has the rights to add, delete or modify the questions and extend exam timing etc.". Read the document carefully and if necessary you can add additional details related to the system.	12 Marks
		(OR)	
8	a)	Demonstrate the state chart diagram with example.	6 Marks
	b)	Explain the use of activity diagrams in object oriented product development with an example.	6 Marks

UNIT-V

9	a)	Develop the component diagram for online Bus reservation system.	6 Marks
	b)	Explain in detail about modeling physical database.	6 Marks

(OR)

10		Design and develop UML diagrams for Airline reservation system.	12 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. III Semester (SVEC14) Supplementary Examinations July - 2016

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)	Explain the uses of Computer Networks related to home applications.	5 Marks
	b)	Explain about protocol hierarchies and design issues of various layers in Network Software.	7 Marks
		(OR)	
2	a)	How packets are sent in a simple Client – Server interaction on a Connection oriented Network? Explain.	8 Marks
	b)	Explain the relationship between Services and Protocols with a neat diagram.	4 Marks

UNIT-II

3	a)	Explain pure ALOHA and slotted ALOHA.	7 Marks
	b)	Explain Go back N.	5 Marks
		(OR)	
4	a)	Explain CSMA with collision detection.	7 Marks
	b)	Explain persistent and non-persistent CSMA techniques.	5 Marks

UNIT-III

5	a)	Explain Shortest path Routing and Distance vector Routing algorithms with examples.	6 Marks
	b)	What are Network layer issues? Explain them in brief.	6 Marks
		(OR)	
6	a)	Describe Congestion Prevention policies and Congestion Control in Virtual circuit subnets.	6 Marks
	b)	Explain various techniques for achieving good Quality of Service.	6 Marks

UNIT-IV

7	a)	Explain working process of UDP protocol and explain each field in UDP header with neat diagram.	5 Marks
	b)	Explain flow control and buffering in transport layer.	7 Marks
		(OR)	
8		Demonstrate: i) Leaky bucket algorithm. ii) Token bucket algorithm.	12 Marks

UNIT-V

9	a)	Explain E-mail architecture and services.	6 Marks
	b)	Explain World Wide Web.	2 Marks
	c)	Define Cryptography and Cryptanalysis.	2 Marks
	d)	Draw encryption model.	2 Marks
		(OR)	
10	a)	Explain Domain Name System with resource records.	8 Marks
	b)	What is cryptography? Explain any two of fundamental principles of cryptography.	4 Marks

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CODE No.:10MC4HS01

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC10) Supplementary Examinations December - 2015

ORGANIZATIONAL BEHAVIOUR AND HUMAN RESOURCE MANAGEMENT

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Define nature and scope of Management. What are the 14 principles of Management?

2. Define Organizational Behaviour. Explain its characteristic features and important models.

3. What are the individual dimensions organizational behaviour?

4. What are the factors affecting learning process?

5. Give a comprehensive note on the evolution of the concept of HRM.

6. Define Job Design. Explain the factors that influence Job Design.

7. Discuss Selection as a source of compliance advantage. What are the barriers to effective Selection?

8. Discuss HR activities towards BPO'S in India.

CODE No.:14MC4HS01 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC14) Regular Examinations July - 2016

BUSINESS COMMUNICATION AND PRESENTATION SKILLS

[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 elements of Mehrabian model along with the scales of impact of different communicative parameters.	12 Marks
	(OR)	
2	Present the role and significance of Informal Communication in a professional environment.	12 Marks

UNIT-II

3	Write about the following body language in different countries. i) Handshaking. ii) Looking at the boss. iii) Thumbs up. iv) O.K gesture.	12 Marks
	(OR)	
4	"Verbal communication is more important than non-verbal communication". Discuss.	12 Marks

UNIT-III

5	What are the common components of a business letter?	12 Marks
	(OR)	
6	You are interested in availing car loan facility from a bank. Write a letter to the Chief General Manager, SBI branch of your locality requesting him to send you all the information related to SBI car loans.	12 Marks

UNIT-IV

7	What are the essential elements in the introduction, body and conclusion of an oral presentation?	12 Marks
	(OR)	
8	Write about the myths about the Group Discussion.	12 Marks

UNIT-V

9	Explain the significance of the process of setting the goal for a bright career.	12 Marks
	(OR)	
10	Give an account of the Non-verbal aspects of an interview.	12 Marks

CODE No.:14MC40101 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC14) Regular Examinations July - 2016

MANAGEMENT INFORMATION 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		Write in detail about System View of Business in MIS.	12 Marks
		(OR)	
2	a)	Discuss about Expectancy Models of Motivation.	6 Marks
	b)	Write and discuss about leadership issues and structural model of leadership.	6 Marks

UNIT-II

3		Write a note on MIS as a technique for making programmed decisions.	12 Marks
		(OR)	
4		Write a short note on:	
		i) Personal Information System.	6 Marks
		ii) General Business Planning.	6 Marks

UNIT-III

5		Explain the process and steps involved to determine the degree of automation of each operation in an organization.	12 Marks
		(OR)	
6	a)	Write about different information sources in Conceptual Design of MIS.	6 Marks
	b)	Explain about the trade-off criteria in detailed System Design of MIS.	6 Marks

UNIT-IV

7		Explain the Gantt charts of MIS implementation. Also explain about Network Design for MIS implementation.	12 Marks
		(OR)	
8		Explain briefly how Computer Based Information System can enhance marketing function in a firm.	12 Marks

UNIT-V

9		Write a detailed note on fundamental weaknesses of MIS development.	12 Marks
		(OR)	
10		Explain about implementation of TAR PIT.	12 Marks

CODE No.:14MC40102 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC14) Regular Examinations July - 2016

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)	Create a set of HTML reference pages for the subset of HTML elements and attributes. There should first be a page that contains a (short) list of two hyperlinks: (1) to a page with a table of elements. (2) To a page with a table of attributes. The table of attributes should contain two columns the first listing the elements and the second listing the attributes that are associated with each element. The attributes should be listed one per table row and each element name should span the rows containing its attributes. Each element and attributes name in the table should be a hyper link to detail page describing that element or attribute. The table of attributes should be similar, except that the attribute names are in the first column and each attribute name will span a set of rows containing element names associated with the attribute.	6 Marks
	b)	Write a CSS rule that sets an element to occupy 60% of the screen width and that is centered horizontally.	6 Marks

(OR)

2	a)	Write a JavaScript code block, which checks the contents entered in a form's text element. If the text entered is in the lower case, convert to upper case. If the text entered is in the upper case, convert to lower case.	6 Marks
	b)	Discuss the following JavaScript concepts with an example program: (i) Ojects (ii) Strings	6 Marks

UNIT-II

3	a)	Construct an XML schema for a super market information management system. Explain it.	6 Marks
	b)	Highlight the advantages of XML over HTML.	6 Marks

(OR)

4	a)	What is SAX parser? What is produces?	4 Marks
	b)	Compare SAX parser with DOM parser	4 Marks
	c)	Discuss the importance of namespace in XML.	4 Marks

UNIT-III

5	a)	Explain any four interfaces from Javax.servlet package.	4 Marks
	b)	How to read cookies from Servlet? Explain with an example code.	8 Marks

(OR)

6	a)	Discuss any three JDBC API classes.	6 Marks
	b)	Explain the procedure, how to manage User Sessions in Servlets. Give an example code.	6 Marks

UNIT-IV

7	a)	Explain briefly about Implicit Objects.	6 Marks

b) Write the advantages of JSP over Servlets. 6 Marks

(OR)

8 Consider the following: 12 Marks

Database: College_library; Table : books (column_name : Datatype) : (id int, title varchar(50), author varchar(50), price float, qty int).

Write a JSP program to retrieve details (title, author, price) of all books whose price is greater than 500.

UNIT-V

9 a) What is the difference between Assignment and Cloning? Explain with an example PHP5 code. 6 Marks

b) Write PHP code to fetch rows from the database table and display number of rows fetched along with the content of each row. 6 Marks

(OR)

10 What is session tracking in PHP? How to manage sessions using PHP? Explain with an example code. 12 Marks

CODE No.:14MC40103 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC14) Regular Examinations July - 2016

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	a)	What is big data? Explain why big data is so important.	6 Marks
	b)	List out and explain new growth opportunities available in big data.	6 Marks
		(OR)	
2	a)	Discuss security aspects in big data.	6 Marks
	b)	Discuss how to get start in big data journey.	6 Marks

UNIT-II

3	Discuss on BDW and Analytics.	12 Marks
	(OR)	
4	Explain in detail how to develop business hypothesis in BDA.	12 Marks

UNIT-III

5	Explain how to analyze data with Hadoop.	12 Marks
	(OR)	
6	Explain MapReduce data flow with single, multiple and no reduce tasks.	12 Marks

UNIT-IV

7	How data integrity is provided in HDFS.	12 Marks
	(OR)	
8	What is YARN? How does Hadoop run MapReduce job using YARN?	12 Marks

UNIT-V

9	Illustrate the Configuration Management in Hadoop. Explain in detail about Environment Setting.	12 Marks
	(OR)	
10	Explain how the components of HDFS organize their persistent data on disk.	12 Marks

CODE No.:14MC40105 SVEC-14

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC14) Regular Examinations July - 2016

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		List and explain the reasons of "why conventional software management does not perform satisfactorily".	12 Marks
		(OR)	
2	a)	What are the components of a good cost estimates? Explain.	6 Marks
	b)	Explain the key practices that improve the overall software quality.	6 Marks

UNIT-II

3		List and explain the five different Artifact Sets.	12 Marks
		(OR)	
4		Discuss the work flows and activities of management Artifacts.	12 Marks

UNIT-III

5		Prepare a work break down structure for a software project. Assume that you are asked to develop a student Management Information System.	12 Marks
		(OR)	
6		Write short note on Planning and schedule estimating process.	12 Marks

UNIT-IV

7		What are the main features of the default organization? Discuss about default project organization structure and their responsibilities.	12 Marks
		(OR)	
8		Discuss about the following in detail :	
		i) Configuration Control Board.	6 Marks
		ii) Process Automation.	6 Marks

UNIT-V

9	a)	What are the W^5H questions to be answered for a SW measure?	6 Marks
	b)	Name metrics for reliability, SW cost, effort, SW complexity with examples.	6 Marks
		(OR)	
10	a)	Discuss about next generation cost models.	6 Marks
	b)	What are the priorities used for tailoring the process framework? Explain.	6 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. IV Semester (SVEC14) Regular Examinations July - 2016

INFORMATION RETRIEVAL 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 Explain in detail about the following: 12 Marks
- i) Selective Dissemination of Information.
- ii) Index Database Search.
- iii) Document Database Search.
- iv) The difference between IRS and DBMS.

(OR)

2 Discuss various Search Capabilities of an Information Retrieval System. 12 Marks

UNIT-II

3 a) Briefly explain about information extraction. 6 Marks
b) Compare and contrast indexing by term and indexing by concept. 6 Marks

(OR)

4 a) For the word “duplicatable", what are the steps in the stemming process when Porter stemmer is used? 6 Marks
b) Explain the various methods in finding the successor varieties of a word with suitable example. 6 Marks

UNIT-III

5 Explain the contribution of Natural Language Processing in Indexing. 12 Marks

(OR)

6 Explain the following clustering techniques with suitable example. 12 Marks
- i) The clique technique.
- ii) The single link technique.
- iii) The star technique.

UNIT-IV

7 a) What are the characteristics of intelligent agents? Describe the role of agents in locating the interesting information in web. 6 Marks
b) Write short notes on relevance feedback technique. 6 Marks

(OR)

8 Discuss the difficulties of a user being able to correlate his search to the Hit file. What approach would you use to overcome these problems? 12 Marks

UNIT-V

9 List out major algorithms used in software text search. Explain Knuth-Morris-Pratt algorithm with an example. 12 Marks

(OR)

10 a) Identify the importance of hardware usage in Text Search system. 6 Marks
b) What is the relationship exists between Precision and TURR. 6 Marks

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CODE No.:10MC50101

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. V Semester (SVEC10) Regular/Supplementary Examinations December - 2015

OBJECT ORIENTED ANALYSIS AND DESIGN

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Explain in detail about the Architecture and Software development life cycle.

2. Explain common modelling techniques in detail.

3. Explain in detail about the Class and Object Diagram with suitable example.

4. a) Differentiate between State chart and Activity diagram.
b) Draw a Sequence diagram for "Railway Ticket Reservation System".

5. Explain in detail about the Activity and Use Case diagram.

6. a) Differentiate Processes and Threads. How are they represented in **omh**?
b) Write short notes on Deployment diagrams.

7. Describe in detail about Design patterns.

8. What are the various design problems and explain in detail?

CODE No.:10MC50102

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. V Semester (SVEC10) Regular/Supplementary Examinations December - 2015

MANAGEMENT INFORMATION SYSTEM

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Explain in detail about the MIS organization within the company.

2. Distinguish between traditional and modern approaches for the MIS.

3. What are the components of DSS? Explain them in detail.

4. Discuss the approaches for MIS design.

5. Discuss about the constraints of MIS design.

6. Explain the approaches for defining the subsystem of MIS.

7. Explain the procedures for Implementation in the organization.

8. Discuss in detail about the fundamental weakness in developing an MIS.

CODE No.:10MC50103

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. V Semester (SVEC10) Regular/Supplementary Examinations December - 2015

MIDDLEWARE TECHNOLOGIES

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. a) Compare centralized and distributed computing models.
b) Explain about client/server models.

2. a) Write a note on EJB client/server development process.
b) What are Callback Interfaces? Explain with an example.

3. Enumerate the steps involved in creating and using a delegate.

4. Describe the XML web services used in web applications.

5. a) Explain in detail about Events and Properties in Java Bean Component Model.
b) Explain CORBA Java-to-IDL mapping.

6. How does the IDL and ORB performing -component collaborate in distributed environment? Explain with a diagram.

7. Write short notes on:
i) Static CORBA.
ii) .NET Remoting Layer.
iii) EJB container Framework.

8. a) List the preliminary set of EJB guidelines.
b) Explain EJB Packaging.

CODE No.:10MC50106

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. V Semester (SVEC10) Regular/Supplementary Examinations December - 2015

SOFTWARE TESTING

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. Define Testing and explain the purpose of testing.

2. Explain the importance of basis of path testing and explain with an example any one of the achievable paths.

3. a) What are transaction flow testing techniques? Explain in brief.
b) Compare static and dynamic anomaly detection.

4. Why do we do compatibility test and need domain testing?

5. Write short note on :
i) Path product
ii) Path sums
iii) Path expression

6. List any six of predominant testability tips and sort them by their application usage.

7. What are the principles of a Graph Matrix?

8. a) Compare WinRunner and LoadRunner testing tools.
b) Compare JMeter and JUnit testing tools.

CODE No.:10MC50108

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

M.C.A. V Semester (SVEC10) Regular/Supplementary Examinations December - 2015

CLOUD COMPUTING

[MASTER OF COMPUTER APPLICATIONS]

Time: 3 hours **Max. Marks: 60**

Answer any FIVE questions
All questions carry equal marks

1. What are the various components of Cloud Computing and explain with the help of architecture diagram? Explain the role of Software as a Service (SaaS).

2. Briefly explain the following:
   i) Software Virtualization.
   ii) Red hat Virtualization.
   iii) Hardware Virtualization.

3. What are the Virtualization levels and explain in detail?

4. What are the different types of storage virtualization? Elaborate each of them.

5. What are the various Cloud Computing technologies? Discuss in detail.

6. a) What kind of applications are best suited for Grid Computing?
   b) Is it safe to rely an extensive use of remote computers?

7. List out the various security issues in Cloud Computing and explain in detail.

8. Compare the tools of Amazon S3 and Google APP Engine.